The RUBBER AGE

VOL. 29, NO. 6 JUNE 25, 1931

LATE NEWS of the Industry

May Consumption of 37,817 Long Tons Was the Heaviest for a Full Year

CONSUMPTION of crude rubber by manufacturers in the United States for the month of May was the highest for any month since May a year ago and is estimated to be 37,817 long tons, an increase of 13.5 per cent over the April consumption of 33,321 long tons, according to statistics released by the Rubber Manufacturers Association.

Imports of crude rubber for May amounted to 31,720 long tons, the lowest figure since August, 1928, and compares with 46,648 long tons for April and 40,745 long tons for May, 1930, according to the association's own estimates.

For the first time since September, 1929, stocks on hand in the United States showed a decrease from the previous month's figure. Total domestic stocks of crude rubber on hand and in transit overland on May 31st are estimated at 220,799 long tons, a decrease of 3.3 per cent under April, although 56.2 per cent over May 1930.

Crude rubber afloat for United States ports on May 31st is estimated at 73,564 long tons as against 56,700 long tons on April 30th and 68,168 long tons on May 31, 1930. The total of 294,363 long tons on hand and afloat compares with the previous peak of 285,082 long tons on April 30th and marks a record total for the history of the domestic industry.

Rubber Industry Among Least Profitable, F. A. Seiberling Tells Purchasing Agents

THAT rubber manufacturing has become one of the least profitable of all domestic industries and can be brought out of that position only by the control of crude rubber supplies passing into the hands of the manufacturers was asserted by F. A. Seiberling, president of the Seiberling Rubber Company, in a talk before the National Association of Purchasing Agents at Toronto, Ont., on June 10. Mr. Seiberling in his address reviewed the development of the plantation industry, the increase in estate yields, the failure of the Stevenson scheme, and the ownership of plantation properties by United States Rubber, Goodyear, Dunlop and Firestone.

Any attempt at organizing a voluntary restriction plan among rubber producers to stabilize prices would fail, he said, as would any form of long term contract between rubber producers and rubber manufacturers. "This situation can be met in only one way—by manufacturers themselves having a substantial interest in the sources of supply," he concluded.

"Anything which affects a basic industry like rubber will affect us all as individuals," Mr. Seiberling told the gathering of purchasing agents. "The rubber manufacturing industry has been one of the least profitable of American industries. For the past 10 years it has done an average annual business of $1,000,000,000 and it has not taken out a clean dollar in the form of profits.

"In 1928 the automotive industry, with which rubber is so closely identified, stood first in point of earnings in a list of 57 American industries. Rubber manufacturing stood 55th. In 1929 the positions were third and 53rd, respectively.

"The automotive industry did not do so well in 1930—dropping to 13th place in a list of 50 industries—but rubber manufacturing showed no profits at all, being somewhere around 44th to 50th among those industries with deficits.

"There have been several causes for this deplorable situation. We rubber manufacturers have a habit of giving our tires away. If we can hang up a new tire production record, or build a new factory somewhere, it doesn't seem to matter much whether we make profits for our stockholders and take care of our employes and their families.

"But in looking a little deeper for the underlying cause of our trouble, we find that year after year we are obliged to charge off huge inventory losses in raw materials, due to wide price fluctuations.

"If we analyze our balance sheets, we see that in spite of all the unfair competitive trade practices which have crept into the industry, had we not been obliged to take such devastating raw material losses the industry would have shown a fair records of earnings.

"And so we come to the conclusion that all our trade practices, which are in themselves deplorable, are really but futile attempts to offset a fundamentally unsound raw material position.

"Fluctuating crude rubber prices have not only can-

celled out a major part of the profits in the past, but the prospects of continued fluctuations renders impossible the exploiting of the tremendous latent potentialities of the industry."

April Production of 4,944,363 Casings Higher Than Any Month Since June, 1930

SHIPMENTS of pneumatic casings continued to show the substantial gains registered early this year, according to statistics released by the Rubber Manufacturers Association.

Shipments of pneumatic casings for the month of April amounted to 4,931,906 units, an increase of 19.7 per cent over March, although 3.1 per cent under April a year ago. These shipments were the largest for any month since August, 1930.

This organization reports production of pneumatic casings for April to be 4,944,363, an increase of 6 per cent over March, although 12.4 per cent under April a year ago. April output was the highest since June of last year.

Pneumatic casings on hand April 30th amounted to 10,031,419 casings and showed practically no change over the March 31st figure, but were 23.3 per cent under April 30th a year ago.

Inner tube shipments slightly exceeded production during April, reducing manufacturers' stocks. In that month, there were 4,616,527 inner tubes produced and 4,636,186 tubes shipped, leaving a stock in manufacturers' hands of 10,412,694 tubes. This compares with 10,474,968 tubes at the end of March. Solid and cushion tire shipments exceeded output for the fourteenth consecutive month, bringing stocks down to a new low level for recent years.

The tire industry is estimated to have consumed a total of 56,270,430 pounds of crude rubber and 19,054,531 pounds of cotton fabric during the month of April in the manufacture of all types of tires and tubes.

The association's estimates are based on reports furnished by manufacturers who produce approximately 80 per cent of the total for the United States, but have been adjusted to represent 100 per cent in the figures quoted above.

United States Rubber Company Closes Its Footwear Factory at Bristol, R. I.

AFTER 68 years of operation, the National India Rubber Company factory at Bristol, R. I., will be closed indefinitely on June 27 by the United States Rubber Company, of which it is a subsidiary. While the suspension of the plant will throw 1,500 employes out of work, and the Bristol operations, as far as the production of "Keds" is concerned will be transferred to United States Rubber factories at Naugatuck, Conn., and Williamsport, Pa., the company has announced, however, that it will offer employment to several hundred of the Bristol employes at the Naugatuck and Williamsport plants, where increased production will begin shortly.

The decision to close the Bristol plant was arrived at only after long consideration of the move and after appeals by Governor Norman Case of Rhode Island and prominent local officials and business men had been heard. State Senator W. H. Vanderbilt, Brigadier General L. H. Callan and President Haffenreffer of the Herreshoff Manufacturing Company were among those who held several conferences with officials of the rubber company in an effort to save the rubber factory for the city. Last month Fred Williams, council president of Bristol, and Charles B. Rockwell conferred at New York with F. B. Davis, Jr., president of the United States Rubber Company, but were also unable to alter the decision to shut down the plant.

One branch of the Bristol factory will be continued, that of the manufacture of rubber insulated wire, requiring about 400 workers. The Goodyear India Rubber Glove Company and Goodyear Metallic Rubber Shoe Company, U. S. subsidiaries at Naugatuck, Conn., are expected to increase their operations shortly on a five day weekly basis.

The Bristol factory, which was opened in 1863, was first known as the National Rubber Company. It passed by assignment in 1887 to the late Colonel Samuel Colt, who changed its name to the National India Rubber Company in 1892. Under normal conditions the factory employed about 3,000 persons.

Firestone Tire & Rubber Company Has Profits of $2,908,553 in Six Months

TOTAL net profits of the Firestone Tire & Rubber Company and all subsidiaries, including Firestone Service Stores, for the six months ended April 30, 1931, after deducting depreciation, interest, federal taxes and Liberian development expenditures, was $2,908,553. Not only is this figure 25 per cent higher than the earnings of $2,320,118 reported in the like period of 1929-30, but it is nearly double the final net profit of $1,541,034 reported for the full fiscal year ended October 31, 1930.

Dividend requirements for the six months' period on the $57,863,300 of 6 per cent preferred stock outstanding on October 31, 1930, were earned 1.67 times, while half-year dividend requirements on the common stock at the present annual rate of $1 a share were covered with a margin of six cents a share for surplus. The common share balance of 56 cents compares with earnings of only 23 cents a share in the same period last year.

"With raw materials, finished products and commitments at market prices at the beginning of the fiscal year and with subsequent purchases made at favorable prices," commented Harvey S. Firestone, president, "no further inventory adjustments were considered necessary."

While confirming evidence that the demand for replacement tires has shown a decided pick-up recently, the Firestone report is also indicative of the extent to which the company has been able to put its cost of operations in line during the past year. Firestone started a program of cost reduction in the early months of 1930 which, however, was not felt to any large extent until the past six months. As time progresses and especially as warm weather appears with a resultant increase in tire business, trade observers believe the benefits of the economies will be even more in evidence than in the past few months.

Despite a lack of warm weather during the spring months so far replacement sales have shown more than seasonal increases in practically all territories. With this in view, it is felt that the advent of hot weather may easily result in the largest dealer tire business that has been seen for several years.

Following publication of the statement, Firestone common stock rallied to a new 1931 high of 21 ½ on June 5 as compared to its low of 13 only a few weeks earlier. Last year Firestone common ranged between a low of 15⅜ and a high of 33⅛ and in 1929 the peak for the old stock was 309, equivalent to about 61 for the new common shares. The company's preferred stock, which had been selling as low as 56¼, also rallied four or five points after the report came out. These preferred shares sold as high as 98¾ when first issued in 1929.

Rubber Men Speak at Summer Meeting Of Society of Automotive Engineers

THE annual summer meeting of the Society of Automotive Engineers was held at the Greenbrier, White Sulphur Springs, W. Va., from June 14 to 19 with over 500 members in attendance. Representatives of several rubber companies were present, and two technical papers were read by tire company engineers.

On June 18, Roy W. Brown, in charge of the engineering laboratories of the Firestone Tire & Rubber Company, presented a paper on "Measuring Characteristics of Tires Which Affect Riding Qualities." He explained that the excellent riding qualities of pneumatic tires result from ability of the tire to deflect relatively large amounts when loaded. Static deflection with varying load can be readily determined in the laboratory with conventional compression test machines, he said, and the authenticity of the use of rate of deflection as a criterion of riding qualities is substantiated by tests with the Firestone solenoid accelerometer on cars on the road in typical service. Other laboratory tests were outlined, together with a discussion of tire and spring inter-effects, the influence of design, and various secondary factors and their effect.

James E. Hale, also of the Firestone Tire & Rubber Company, read a paper on "Driving High Speed Cars," which was followed by an interesting discussion. Burton J. Lemon, of the United States Rubber Company, gave some information on the relation of tire treads and road surfacing materials to skidding and also recounted the results of tests made of the dangers of blowouts at high speed. James C. Martin suggested the use of rubber gears as a substitute for the present spring suspension as a means of eliminating swaying, and several other engineers discussed Mr. Hale's paper.

In addition to the two speakers, other representatives of the Firestone Tire & Rubber Company and the Firestone Steel Products Company included M. E. Ake, William A. Baker, W. S. Brink, J. F. Cast, E. M. Clissold, A. Hargraves, G. M. Kryder, C. Saurer, J. B. Shea, N. B. Stevens and J. W. Shields. The B. F. Goodrich Company was represented by James T. Kennedy, and the Goodyear Tire & Rubber Company by F. W. Telford and J. C. Tuttle. Others present were E. A. Wales, of Raybestos-Manhattan, Inc., and Carl F. Ogren, Carl A. Schell and Frank A. Sharpe, of the Thermoid Rubber Company.

Goodrich Continues Preferred Dividend; Will Move Its Export Office to Akron

DESPITE widespread rumors that it would take a contrary course, the board of directors of the B. F. Goodrich Company on June 9 declared the regular dividend of $1.75 a share on the outstanding preferred stock of the company. By this action, the Goodrich directors maintained unbroken a preferred disbursement record extending back to the incorporation of the present company in 1912. The dividend will be paid July 1 to stockholders of record June 19.

Anticipating a possible passing of the dividend, the Goodrich preferred shares had sunk to a low of 35 in recent weeks. The action of the directors caused it to rally to 46 and in a few days after the declaration there developed a wide spread between the bid and asked quotations for the stock. The closing figures on June 17 were 38 bid, 62½ asked.

According to a decision reached earlier this month, the International B. F. Goodrich Corporation, export subsidiary of the Goodrich company, is scheduled to move its executive offices from New York City to Akron June 25. The move will make possible coordinated effort between the export organization and the parent company, and will bring the sales executives supervising the merchandising of Goodrich products in all parts of the world into closer contact with the manufacturing, development and experimental departments in Akron, according to company officials.

The New York City offices of International Goodrich have been located at 342 Madison Avenue. Goodrich has been in the export business for more than 40 years and has representation in almost every part of the world. V. I. Montenyohl is executive vice-president of the corporation and S. W. Caywood is vice-president. Other officers are all men holding corresponding offices in the B. F. Goodrich Company itself. D. M. Goodrich is chairman of the board and J. D. Tew is president.

Bringing the office to Akron means the return of several former Akron men holding key positions in the export organization. These include H. O. Eckert, general supervisor and tire sales manager; C. A. Drach, general products sales; N. F. Weber, mechanical goods sales manager; M. T. Shaffer, credit manager; and E. D. Nathan, advertising manager.

Charles S. McCain, president of the Chase National Bank, New York City, was named a member of the executive committee of the B. F. Goodrich Company, bringing the number of non-management representatives in that group up to four as against two representatives of the actual management. Mr. McCain was elected a director of the company last year. In addition to heading the Chase National Bank, he is vice-chairman of the board of the Chase Securities Corporation, a director of the Western Electric Company, National Cash Register Company, American Express Company, National Surety Company and the Louisiana & Arkansas Railway Company and a trustee of the Penn Mutual Life Insurance Company.

Pennsylvania Rubber Observes 32nd Year By Resuming Working Week of Seven Days

THE 32nd anniversary of the founding of the Pennsylvania Rubber Company is being observed this month by the factory at Jeannette, Pa. The anniversary will be celebrated, according to W. O. Rutherford, president of the company, by keeping the factory running at top speed on a seven-day production week, which was adopted recently.

Pennsylvania's tire and tube business has increased appreciably this spring owing to the introduction of merchandising plans which have proved unusually successful for dealers. Demand recently became strong enough to justify the company extending its production schedule to seven days a week.

"Pennsylvania's present position is unusually strong and we look with confidence to the future," said Mr. Rutherford on the occasion of the anniversary. "Success in the rubber industry is less one of selling strategy and more one of merchandising strategy. The morale of the Pennsylvania dealers organization is good. We are doing a good business both on our tire and tube line and on our tennis balls.

"It is the opinion of many business men that the depression of the last two years has been the severest the country has experienced in the last thirty years. Pennsylvania emerges from it sounder and stronger and with its dealer structure close-knit and unimpaired."

(Other news of the industry will be found on Pages 277-282)

Possibilities of ELECTRIC HEAT for Vulcanization

Recent Progress in Construction of Electric Industrial Ovens Indicates Advantages of Electric Heat for Vulcanizing Certain Types of Products

FREQUENTLY a rubber factory requires a local heating source which cannot readily be furnished by steam without installation of an elaborate piping system; another manufacturer may require vulcanizing facilities but does not want to install a steam boiler plant; or a plant may desire a temporary source of vulcanizing or heating which can easily be moved if desired. These and other similar heat problems often confront rubber manufacturers.

How many rubber production engineers have in such instances given consideration to the possibilities of electric heat to meet their needs? Have they, in common with many others, dismissed electric heating from their minds on account of the possible high operating cost without full knowledge of the other factors, incidental to electric heat installations, such as the low initial cost, simplicity of installation, lower labor costs, and uniformity of heat with the resulting economies of production, improvement of products and betterment of working conditions?

For those manufacturers interested in the possibilities of electric heat there has now been made available the result of a long study of this problem as applied to many industries. Already a few rubber plant engineers have become acquainted with the facts and in one known instance an installation of two industrial electric ovens has been made by a leading rubber manufacturer.

The following information* on the cost factors that should be considered when comparing electric heat with fuel heat—as applied in cabinet type industrial electric ovens and dryers for temperatures under 750° F.—should prove of interest to the rubber industry:

*Data and illustrations supplied by Freas Thermo-Electric Co., Irvington, N. J.

Initial Investment and Carrying Charges

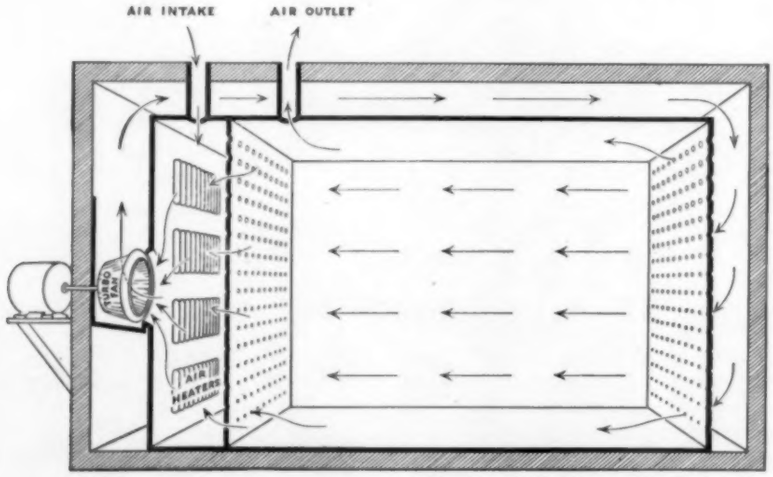
As electric heat generally requires less equipment than fuel heat a smaller investment is necessary. Electric ovens are self-contained units, whereas other systems require many auxiliary operating devices as fuel and ash handling equipment, flues, storage tanks, etc. Naturally the cost of installation of the electric equipment is less and the interest on the investment is considerably lower.

The carrying charges, which consist of depreciation, obsolescence, insurance and rental space, are lower for the electric equipment because it is not subject to intense heat or corrosive action of flames and accordingly has a longer life and earns lower insurance rates. Space required is also considerably less.

Cost of Heat Energy

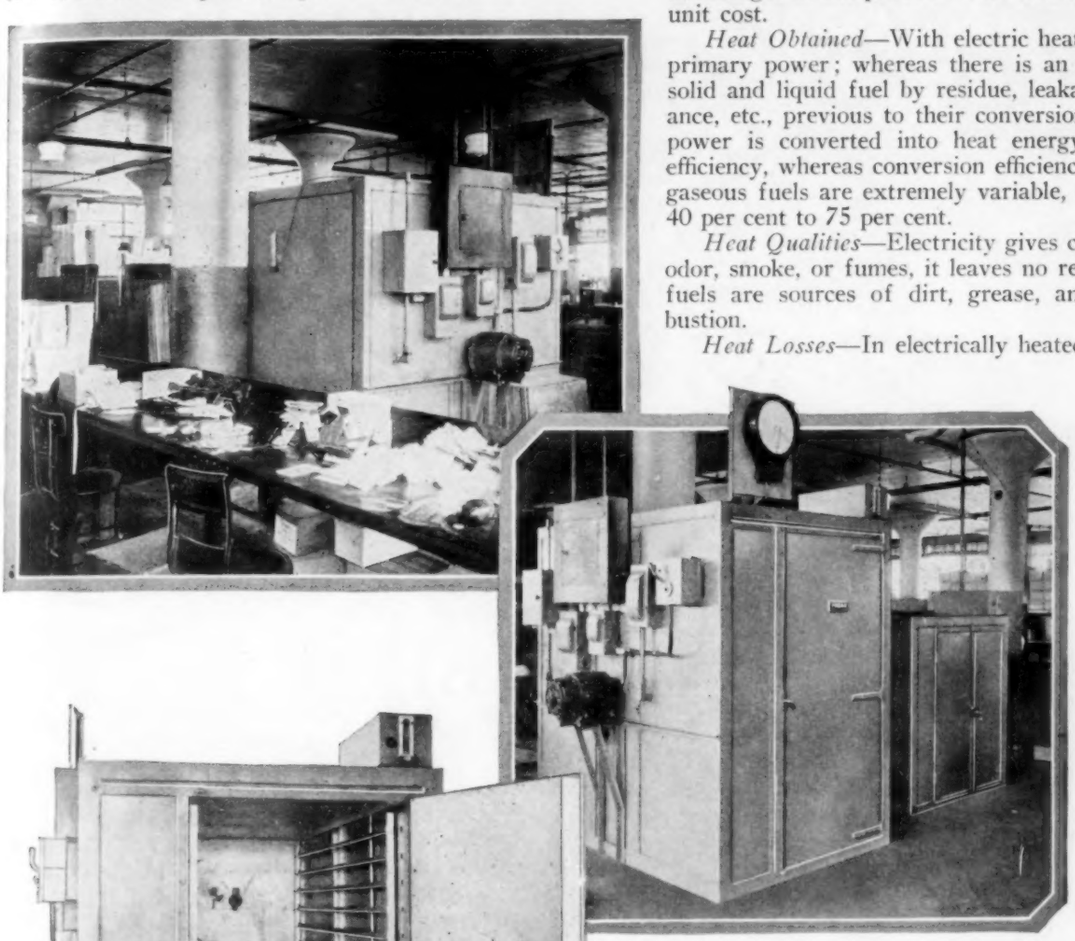
Heat Source—Measurement of the heat content in thermal units is the only common basis upon which a comparison can be made between the primary cost of electric power and the primary cost of fuel.

Electric power is constant in heat value, one kw. hr. being equal to 3,415 B.t.u.; whereas the heat content of fuels varies greatly and has no fixed B.t.u. equivalent. The total heat content of electric power can be accurately determined, the metered electric input being a direct measure



Schematic diagram showing the Freas system of forced-air circulation, with a horizontal flow of heat through the service chamber—also illustrating the relative positions of the motor driven fan, ducts, vents, heaters, etc.

of the total heat; whereas the determination of total heat content of fuels is subject to inaccuracies, since its measurement is dependent upon a technician's laboratory analysis or test of a small sample and upon calculations.



General views in the factory of I. B. Kleinert Rubber Company, College Point, N. Y. where rubber goods are heat treated in Freas electric ovens, showing how they may be located in the production line, without discomfort to the employes, due to radiation of heat

Fair average values for fuel heat content and unit prices may be assumed as follows: Coal, 14,000 B.t.u. per pound at $12.00 per ton; fuel oil, 135,000 B.t.u. per gallon at 7 cents per gallon; natural gas, 1,000 B.t.u. per cubic foot at 50 cents per 1,000 cubic feet; city gas, 550 B.t.u. per cubic foot at 75 cents per 1,000 cubic feet; electricity, 3,415 B.t.u. per kw. hr. at 1½ cents per kw. hr.

On the basis of the above figures the primary cost per million B.t.u. is: Coal, 43 cents; oil, 52 cents; natural gas, 50 cents; city gas, $1.36; and electricity, $4.39. On a thermal unit basis the primary cost of electric power is usually more costly than fuel—but a comparison of cost solely on B.t.u. basis does not take into account the efficiency of conversion, efficiency of utilization, and other advantages in the process which considerably alter the final unit cost.

Heat Obtained—With electric heat there is no waste of primary power; whereas there is an appreciable waste of solid and liquid fuel by residue, leakage, losses in conveyance, etc., previous to their conversion into heat. Electric power is converted into heat energy with 100 per cent efficiency, whereas conversion efficiencies of solid, liquid or gaseous fuels are extremely variable, ranging at best from 40 per cent to 75 per cent.

Heat Qualities—Electricity gives clean heat, it emits no odor, smoke, or fumes, it leaves no residue; whereas other fuels are sources of dirt, grease, and products of combustion.

Heat Losses—In electrically heated equipment the heat losses are considerable less than in fuel-heated equipment. Electric heat itself requires no ventilation, there is no escape of unutilized heat by way of flues and draft chimneys.

Heat Utilized—The most important consideration in the cost of heat energy is the effectiveness and efficiency of heat utilization, which takes into account not only the percentage of total heat content that is actually used in performing the work intended, but also the efficiency of the heating operation. Methods of heat application in industrial ovens and dryers may be classed as direct and indirect. In the direct method the heat generated is made to affect directly the work being treated, and consequently is the most economical and efficient of the two.

Electric heat is adaptable to direct heating since it is flameless and creates no gases; whereas when fuel heat is used the product is subject to the products of combustion, may also be subject to flame temperatures, if volatile vapors are present explosions may result, and it is more difficult to control the temperature. When indirect methods are resorted to in fuel heating to eliminate the products of combustion from the service chamber and afford better means of temperature control, it results in a consequent loss of heating efficiency and decreased speed of performance.

Electricity is more flexible in its operating range than fuel heat; lends itself more readily to accuracy of heat control; and the intensity of the heat can be varied to exactly suit requirements. Temperatures in electric ovens and dryers can be raised or lowered at will by simply moving the controller to the desired point—a simplicity of control that is difficult to obtain with solid, liquid or gaseous fuels.

Electric heat is always ready, and the service chamber heats up quick y to the desired temperature; whereas fuel-fired equipment is subject to a delay in starting.

Labor Charges

Less manual and skilled labor is required in the operation of e'ectrically-heated industrial ovens and dryers than with fuel-fired. All control operations are performed automatically — practically eliminating dependencies on the human judgment; and little technical supervision is needed.

Expense of Maintenance

Electrically heated ovens and dryers require practically no maintenance and will endure for a long time in service. The various elements of electric ovens are standardized, inexpensive parts—readily obtained from a supply house or the manufacturer and may easily be installed by any competent mechanic—thus minimizing the cost of repairs, should they be necessary.

Economies of Production

Electric ovens and dryers may be located anywhere, on any floor of the building, for they constitute no fire hazard, and they radiate comparatively little heat. They are always ready for instant use, heat up quickly, and save time in starting after inoperative periods, and may be started automatically by time-clock switching if desired.

The accuracy and reliability with which temperature conditions are automatically controlled in electric ovens and dryers insures correct performance and exact duplication of results day after day without variation from a uniform quality of output.

An automatically controlled electric oven or dryer will generally heat-treat a batch in less time than fuel-heated equipment—due to the balanced heat condition, maintenance of correct temperatures, accelerated heat transfer, and procedure without interruptions—thus effecting an increase in the speed of production.

Electric ovens and dryers will handle a greater volume of work than fuel-heated chambers of the same dimensions —because the heat is uniformly distributed and the chamber may be fully loaded. Since also they occupy less floor space, other manufacturing operations may be carried on close by and in the unocupied space.

Heat-treating operations can be performed in the off-peak period during the night hours, as readily as during the day—thus taking advantage of the lower night power costs. The ovens and dryers can be loaded and started before closing time, with time-switch set.

Basic Principles of Design

It is not possible in the short space of an article of this kind to present a full discussion of the basic principles of the design of industrial ovens without going into a description of heat and its effects, heat transfer, heat control, ventilation and efficiency. The development of industrial electric ovens to their present state of perfection is, however, proof of their proper design and the application of all the well-known laws affecting the flow of heat and transfer of heat energy.

Industrial ovens and dryers are fundamentally e'ectrically heated cabinets with an enclosed chamber in which the temperature is automatically maintained constant at any preselected value within its range—not exceeding 750° F.; insulated to minimize heat losses, ventilated to allow the escape of gases, and with provisions that insure a uniform distribution of heat to all portions of the interior.

The framework is of structural steel, rigidly braced, and welded together. The walls are from 2 to 4 in. thick and are well insulated to prevent heat losses; are of low thermal capacity to insure maximum operating efficiencies; and are structurally strong to withstand service conditions.

The resistors are of nickel-chromium alloy, and are advantageously placed to procure uniform heat distribution. Baffle walls intervene between the heat source and the oven chamber so that there is no direct uncontrolled radiation of heat, and they also serve to protect the heaters from accidental injury.

Carefully proportioned passages, air ports, and vents for the directional control, admission, and escapement of gases are provided as shown in the accompaning schematic diagram. A multivane turbo-fan produces the movement of the air and creates the static air pressure in the chamber. It also thoroughly mixes air that is to be recirculated with fresh air that has been introduced to replace that which was expelled. The heated air enters the service chamber through outlets in a baffle and after passing over the work, giving up its heat, absorbing moisture, and liberating gases, the greater portion of the air passes through a similar baffle on the opposite side of the chamber thereby entering a compartment, within the walls of the oven or dryer, where the heaters are installed. The remaining portion passes through suitably placed vents to the atmosphere carrying off gases, fumes, and vapors.

An airport in the heating compartment admits the supply of fresh air needed to replace that which has been discharged, and to maintain the proper air balance for satisfactory operation.

From the heating compartment the heated air is drawn into the turbo-fan where, as aforementioned, the heated fresh air is thoroughly mixed with the reheated air withdrawn from the chamber, diluting the volatiles and producing a uniform air mixture which is returned to the chamber to repeat its cycle of circulation.

A thermostat automatically maintains the temperature constant within plus or minus 2° F., at any degree of heat within the specified temperature range, for any desired period of time. It is extremely sensitive and quick to respond to the slightest change in temperature.

The standard sizes of these ovens vary from 36 to 96 inches in width and from 36 to 72 inches high. The temperature ranges which can be obtained vary from 150° to 750° F. with ratings from 7.5 to over 60 k.w.

The factors herein discussed—fundamentally a comparison between electric heat and fuel heat—may help to throw light on a subject about which little has been written, especially from the viewpoint of the rubber manufacturer. Whether or not the time is ripe now for any general application of electricity for vulcanizing, the foundation has been laid and undoubtedly the rubber industry will not be backward about looking to this new source of heat for some of its future requirements.

Rubber in Automobiles

OLDSMOBILE engineers report that there are 87 places where the use of rubber contributes to quiet smooth operation in the new Oldsmobile car.

"Years ago most noises were traceable to the engine," say Oldsmobile engineers. "As these were quieted by refinements in design, improved balance, vibration dampers and carburetor silencers, other noises previously unnoticed became apparent. Transmissions have been quieted; springs and chassis have been improved and made less noisy by the generous use of rubber.

"Thus throughout the development of quiet operation, engineers have found that when they conquered one noise another lesser one, which had not been noticed, at once manifested itself. In fact, the stage has been reached where the one point considered quiet ten years ago—the tires—may cause the greatest noise."

A RUBBER ANOMALY—

While Crude Rubber Sells for About 6c Reclaimed Rubber Hydrocarbon Brings 10c

An Interesting Analysis of the Present Situation in Which the Many Advantages of Reclaim Cause Its Use to Be Maintained Despite Price Differential of the Hydrocarbon

By ARTHUR D. LITTLE, INC.*
Cambridge, Mass.

RECLAIMED rubber has been generally considered as a substitute for crude rubber, but with the great drop in the price of crude a curious situation has developed—the substitute is being purchased in large quantities at a higher price than the pure crude.

"Reclaim" as an antidote for high-priced crude was one of the weapons recently employed to combat the high prices created by the Stevenson Restriction Act. American consumption of crude rubber amounted to over 440,000 long tons in 1929 valued at about $200,000,000, or about 20 cents a pound, while in the same period approximately 200,000 long tons of reclaimed rubber valued at about $26,000,000 or about 5.8 cents per pound, were used. Reclaimed rubber thus represented about 31 per cent in quantity and about 11.5 per cent in value of the total rubber consumed. Now, however, the price situation has changed so that crude rubber is cheaper than reclaimed rubber.

Reclaim vs. Crude

It is true that in many cases reclaimed rubber could be advantageously replaced with crude rubber. Crude rubber, other things being equal, gives a stretchier, stronger, tougher product. Furthermore, it is possible to obtain the maximum tensile strengths and maintain other properties if considerable proportions of reclaimed rubber are included.

Reclaimed rubber has other limitations. Its use is a handicap in obtaining white and other colors based upon white. Moreover, in addition to the rubber hydrocarbon reclaimed rubbers contain other ingredients which may introduce undesired substances into the final rubber mixture.

In spite of these limitations, a reclaimed rubber containing only fifty-five per cent of rubber hydrocarbon sells for five and one-half cents per pound whereas the best grades of crude rubber may be bought for six cents per pound. In other words, reclaimed rubber hydrocarbon inferior in stretch, strength, and abrasion resistance costs ten cents per pound, whereas the superior source of this substance can be obtained for a much lower figure.

There has been a decrease in the consumption of reclaimed rubber, but when comparisons are made in relation to the crude rubber consumption a new view is unfolded. To be sure, the proportion of reclaimed to crude rubber consumed is also declining, but at so reduced a rate that for economic purposes it is almost negligible. In other words, the reclaimed rubber industry seems to be suffering primarily from the general business depression and only secondarily from the cheaper crude rubber.

Why should the rubber industry, in an uncomfortable condition, use the reclaimed product at all when the superior crude product can be obtained at almost one-half the price? The answers reveal some of the curious characteristics of this industry.

Without doubt large volumes of reclaimed rubber are used because of the manufacturer's fear of changes. But reclaimed rubber is no longer a mere substitute for crude rubber. In addition to its similarity to crude rubber, it also possesses properties which differ in degree and kind. These differences are valuable enough to warrant the higher cost involved in using it. The advantages appear in the different stages of manipulation, vulcanization, or even utility in the finished product.

Thus it is a curious fact that a combination of crude rubber with most reclaimed rubbers produces a mixture which is more plastic than either alone. Such combinations mix much faster and absorb powdered fillers at a more rapid rate, not only increasing production of both machine and operator, but also reducing power consumption and wear and tear on equipment. A large volume of inert fillers may also be thus incorporated without producing the "overmilled" effect that often results when crude rubber alone is used.

Reclaim Still Essential

Owing to the fact that certain types of reclaimed rubber resemble semi-vulcanized rubber when cold, its intelligent employment may eliminate preliminary vulcanization or semi-cure in processing. The automobile top industry has not as yet found a substitute for some grades of reclaimed rubber which not only take a perfect impression of the embossing rolls but which will maintain that impression during the heat of vulcanization. Crude rubber compounds are apt to be too springy, and even if this is overcome by clever compounding the tendency of uncured crude rubber to thin down, run, and obliterate the desired impressions remains.

Reclaimed rubbers, when intelligently employed, effect a marked reduction in the time required for complete vul-

*From June, 1931 *Industrial Bulletin* of Arthur D. Little, Inc.

canization. In addition to their content of rubber hydrocarbon, reclaimed rubbers also contain valuable ingredients in an excellent state of dispersion.

There is a vast difference between crude and reclaimed rubber when subjected to the action of rubber solvents. Crude rubber, especially after milling, will readily go into solution. Reclaimed rubber will swell but will remain as such surrounded by the clear solvent. As a result the easiest way to make hose for resisting the action of such solvents is to incorporate large volumes of reclaimed rubber.

Economies of Reclaim

This difference in the action of solvents is taken advantage of in another way in the spreading of textile fabrics. Crude rubber solutions in volatile organic solvents are very viscous, so that there is considerable difficulty in obtaining smooth uniform coats. Even when this is accomplished, there is a double expense involved: the comparatively low concentration of rubber employed means that there is a great solvent loss, and in addition the fabric requires a large number of passes in order to build up the required thickness, thereby resulting in a reduced productivity for equipment and operator.

On the other hand, there are grades of reclaimed rubber available which are much better suited than crude rubber for many kinds of spreader operation. Such solutions are not as springy as those made from crude rubber. As a result, heavier coatings may be applied per pass. Furthermore, since the solvent is held less tenaciously by the reclaimed rubber, evaporation proceeds at a much faster rate and production is speeded up. The resulting rubber surfaces are firmer and not as tacky as would be the case if crude rubber alone were used. This has its advantages in that there is an absence of troubles due to the sticking of coated surfaces or the picking of dirt and nap if the coated fabric is rolled up on itself in process.

These are some of the many considerations which induce rubber manufacturers to retain reclaimed rubber in many of their formulas. Reclaimed rubber no longer stands merely as a guard against high prices for crude rubber. Reclaimed rubber is now recognized as a valuable compounding ingredient which imparts distinctive properties not readily obtained in other ways.

Safe Handling Methods in Rubber Reclaiming

A PAPER presented at the recent National Safety Congress at Pittsburgh by A. P. Regal, electrical engineer, Philadelphia Rubber Works Company, Akron, O., contains the following discussion on safe handling:

"It is apparent that conveyors of many descriptions play an important part in handling this large tonnage economically. Before the tires have been chopped they may be handled by the chain type which carries hooks which automatically dump as previously set, or the belt conveyor has a wide application, both here and in later steps of the process.

"Where stock, after being chopped, must be carried to a higher floor, the bucket elevator or the inclined scraper will be used. The spiral conveyor also has a wide field of successful application. A favorite method of handling stock after digesting, when naturally there is a superabundance of water, is with centrifugal pumps, an unusually economical and satisfactory arrangement.

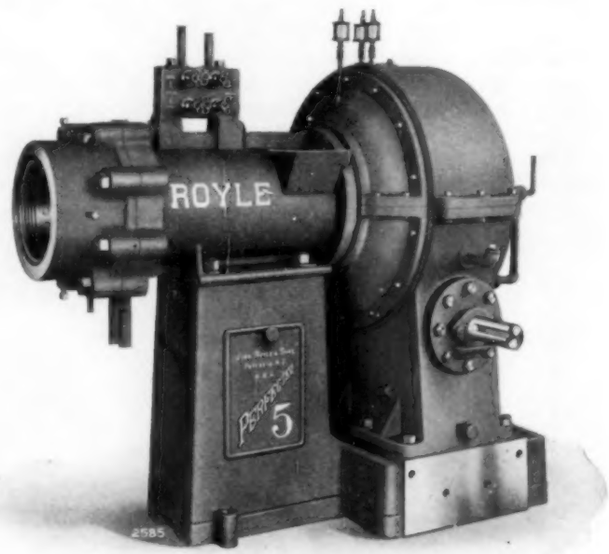
"Pneumatic conveyors, blowers, tubes and delivery cyclones are much used as long as the ground stock is not too wet.

"The handling of the material in process in boxes, wheeled tube or on skid boards, either by gantry cranes as referred to, by overhead monorails, either motored or hand propelled, or by industrial trucks, gasoline or battery powered, is common, expediency and low cost determining which form is employed. The battery lift truck is certainly a flexible piece of equipment, and in some of the many forms available, or adaptations, frequently will be found the most satisfactory method of handling many steps between processes."

New Royle Tubing Machine*

A HEAVY tubing machine designed to handle large jobs economically is being introduced to the rubber industry in the Royle 8-inch No. 5 machine. As a tuber it has all the features of the smaller Royles, plus large size and capacity. As a strainer, it has even a wider application in the industry. It can handle unusual volumes of reclaimed or compounded stock at low temperature and is said to be capable of substantial savings in power and labor. Four to five thousand pounds of strained reclaim per hour has been the experience with this size machine.

As is usual with Royle machines, worm gears transmit the power to the stock screw and the driving worm turns on antifriction bearings. Stock screw thrust is absorbed by a massive roller thrust bearing having a large safety factor.



New Royle No. 5 Tuber and Strainer

The cylinder is of standard Royle construction, having a renewable bushing and circulating jackets. A bronze insert at the rear of the cylinder forms a bearing for the stock screw shoulder. Driving gears are lubricated by the splash system, the driving worm dipping into the supply of oil in the base casting. Gauge cocks show the oil level. Filling and drainage plugs are provided.

The interchangeable motor base may be attached at either right or left side of the machine with but a slight change in gear assembly. The machine alone occupies 40 square feet of floor space (8 x 5 feet) and has an overall height of 6½ feet. The height to the feed throat opening is 56 inches.

*Data supplied by John Royle and Sons, Paterson, N. J.

Comparative Tests of Four ABRASION MACHINES*

By C. A. KLAMAN

Research Investigator, The New Jersey Zinc Co., Palmerton, Pa.

THE choice of an abrasion test method depends in part on the use to which the acquired information is to be put. If it is to be used in specification work, correlation with service is the first requisite, but if it is to be used as a tool for investigation, other considerations may become relatively more important.

Experience with four abrasion machines: du Pont[1], Kelly[2], United States Rubber Company[3], and New Jersey Zinc Company[4], is presented to help answer questions in regard to correlation with service and reproducibility of results.

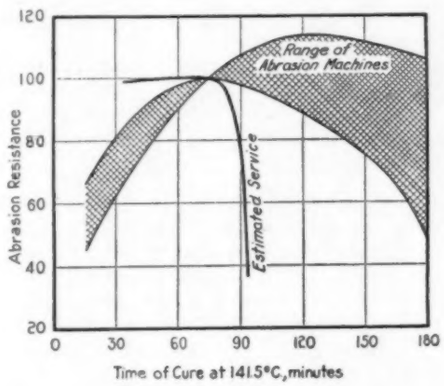


Fig. 1—Comparison of Laboratory Tests With Estimated Service Over a Range of Cures

Reproducibility of Results

Tests for correlation with service were confined to tire tread abrasive loss. Both laboratory results and service results on five compounds, together with formulas, are given in Table I, and show good correlation with compounds Nos. 5, 6, 8, and 9. The machines differ widely for the undercured stock (compound No. 10), and since cure may affect results so greatly, tests were made in a 20-volume zinc oxide stock, over a range of cures, as listed in Table II. A service test (Table I) has shown that an undercure does not lower tread life in one particular case, and unpublished data from this laboratory indicates that undercures in general develop nearly as high abrasion resistance as stocks cured to the optimum. It is generally agreed that overcured treads abrade badly in service, and the general effect of cure on abrasive service is shown in Fig. 1. The laboratory results from Table II are also shown in Fig. 1, and show lack of correlation on both undercured and overcured stocks among themselves and with the estimated service. Investigation of the lack of correlation with service on undercures and overcures on the New Jersey Zinc Company machine shows that the condition of the track or abrasive surface influences results. A new track with sharp abrasive causes less wear on undercured stocks and rapid wear on overcures. (See Fig. II.)

It follows that none of the laboratory abrasion machines

TABLE I.—FORMULAS OF TREAD COMPOUNDS AND DIRECT COMPARISON OF LABORATORY TESTS WITH SERVICE TESTS.

Compounds, Cured 60 minutes at 40 lb.	Composition, Parts by Weight									Service Tests[a]	du Pont Machine	United States Rubber Co. Machine	Kelly Machine	New Jersey Zinc Co. Machine
	Pale Crêpe	Smoked Sheet	Diorthotolyl Guanidine	Sulfur	XX Red Zinc Oxide	Mineroxe	Stearic Acid	Medium Pine Tar Oil	Whole Tire Reclaim					
No. 5—Low Abrasion Standard	50	50	1.25	3.5	18.2	24.4	2	2	..	100	100	100	100	100
No. 6—High Abrasion Standard	50	50	1.25	3.5	18.2	40	2	2	..	102	92	103	103	116
No. 8—Second Grade Tread....	40	40	1.12	3.5	18.2	37.5	2	2	33	79	78	81	84	84
No. 9—Third Grade Tread.....	30	30	1.	3.5	19.2	35	2	2	66	60	68	74	77	66
No. 10—Undercured Tread.....	50	50	0.45	3.5	18.2	40	2	2	..	98	120	79	59	51

[a] Report of Subcommittee XIV on Abrasion of Committee D-11 on Rubber Products. *India Rubber World*, November 1, 1929, Vol. 81, No. 2, p. 61.

TABLE II.—TENSILE PROPERTIES OF A RUBBER COMPOUND OVER A RANGE OF CURES AND THE ABRASION RESISTANCE AS DETERMINED ON FOUR DIFFERENT MACHINES.

COMPOUND: 20 volumes of XX red zinc oxide to 100 volumes of rubber, 6 per cent of sulfur and 1 per cent Hexa by weight calculated on the rubber content.

Time of Cure at 141.5° C., minutes	Tensile Strength, lb. per sq. in.	Elongation, per cent	Stress, lb. per sq. in. for Elongation of		Abrasion Resistance			
			300 per cent	450 per cent	New Jersey Zinc Co. Machine	United States Rubber Co. Machine	Kelly Machine	du Pont Machine
15	1440	625	335	705	66	45	59	[a]
30	2820	705	520	1070	80	59	64	90
60	3260	635	735	1540	95	81	91	92
75	3400	635	780	1670	100	100	100	100
90	3305	615	910	1710	104	109	108	94
105	3300	615	915	1760	95	111	111	93
120	3080	585	955	1870	93	114	98	89
150	2920	575	1050	1870	76	109	90	85
180	2280	505	1140	2020	49	106	80	80

[a] Pulled out of holder, probably because of softness.

TABLE III.—PERCENTAGE DEVIATION FROM ACCEPTED STANDARD

Machine	All Tests Made in One Day					One Test Daily for 10 Days				
	Number of Tests	Maximum Deviation, per cent		Average Deviation, per cent	Percentage of Samples Testing with Over 5 per cent Deviation	Number of Tests	Maximum Deviation, per cent		Average Deviation, per cent	Percentage of Samples Testing with Over 5 per cent Deviation
		Plus	Minus				Plus	Minus		
du Pont.....	18	12	15	8.0	83.3	10	6	7	2.8	30.0
Kelly.....	87	7	5	2.5	4.6	30	11	5	4.1	30.0
United States Rubber Co.	28	6	5	2.5	3.6	40	8	9	3.4	15.0
New Jersey Zinc Co.....	36	6	7	2.4	8.3	30	6	3	1.8	3.3

*Paper delivered as part of a Symposium on Abrasion Testing of Rubber, held at the 34th annual meeting of the American Society for Testing Materials, Chicago, Ill., June 22-26, 1931.

[1] Ira Williams, *Industrial and Engineering* Chemistry, Vol. 19, June, 1927, p. 764.

[2] A. F. Hardman, W. L. MacKinnon and S. M. Jones, *New York Rubber* Age, Vol. 28, February 10, 1931, p. 463.

[3] R. T. Vanderbilt Co. Handbook, p. 72.

[4] H. A. Depew, *Proceedings*, Am. Soc. Testing Mats., Vol. 28, Part II, p. 871 (1928).

are sufficiently reliable to be used alone in specification requirements. It is reasonable to believe, however, that their use may be worked out in conjunction with other tests that will specify comparable cures. In investigation work, the state of cure can be determined, and accordingly there can be no doubt that all the machines can become valuable tools.

Correlation With Service

To test the reproducibility of results, two series of tests were made on the 75-minute cure of the compound covered in Table II. The one series of tests consisted of

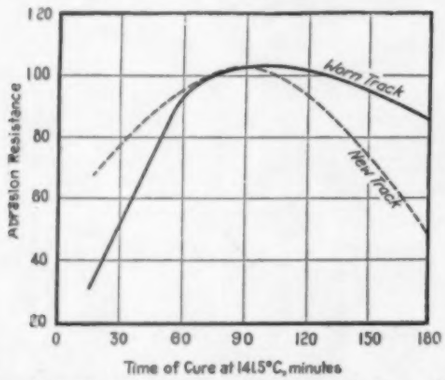


Fig. 2—Abrasion Resistances Over a Range of Cures Comparing a New and Old Track

successive tests on each machine for a full day. The other series of tests consisted of a single daily test on each machine for a period of ten days. In Table III are given the relative results.

The ability to reproduce results with any abrasion machine depends in part on the familiarity of the operator with the machine, and it should be noted that the operators have had more experience with the New Jersey Zinc Company machine than with any of the others. By the same considerations, it is possible that the relative positions of some of the other machines might be bettered in another laboratory. It seems reasonable that an investigator will obtain good results with any of these four machines and also with other machines such as the U. S. Bureau of Standards[5] and the angle[6] or slip[7] machines, provided that they are chosen with the limitations as to service correlation.

[6]P. A. Sigler and W. L. Holt, *India Rubber World*, Vol. 82, August, 1930, p. 63.
[6]W. W. Vogt, Industrial and Engineering Chemistry, Vol. 20, March, 1928, p. 302.
[7]L. J. Lambourn, *Transactions*, Inst. Rubber Industry, Vol. 4, p. 210 (1928).

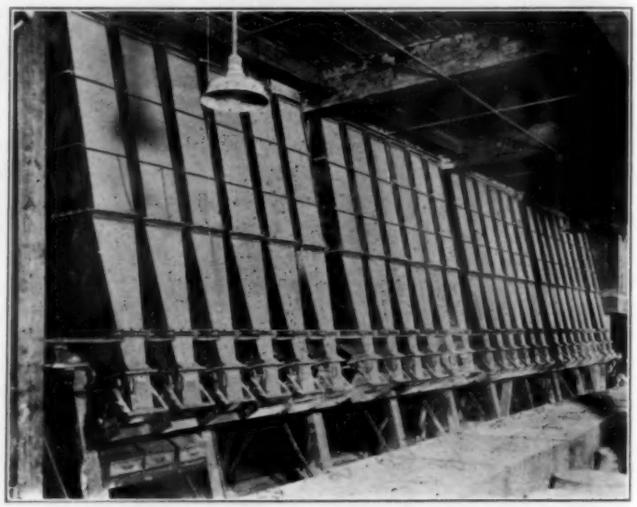
Handling Compounding Materials

STORAGE bins and chutes with control gates, for the handling of rubber compounding materials, have been developed to the point where operations in handling and weighing of such materials are practically automatic.

The latest equipment of this type marketed by the Richardson Scale Company, Clifton, N. J., offers several new features. Specially constructed gates properly control the flow of materials,—stopping flushing or flooding and require no poke rods, vibrators or hammer blows. An air line extends up into the bin and along the sloping sides. An occasion puff of air is all that is needed when "arching" or "bridging" occurs in the bin. The chute at the bottom of the bin is of heavy caste iron, with a swinging type end gate and stop plate. In a specially constructed frame, along the four sides at the bottom of the chute, a heavy duty, double bristle brush is fitted into place. As the swing control gate is opened it permits the flow of material through the center of the chute only. When closing, the brushes at the bottom of the chute sweep across the blade of the control gate, cutting off the flow instantaneously. The control gates are leak proof and hold dusty, grounded and powdered materials securely.

As little as a quarter of a pound of material can be weighed off by correct manipulation of the control gate. Each Richardson storage bin is equipped with a hinged sheet iron cover to further minimize the dust hazard. Richardson storage bins, chutes and control gates are available in sizes and designs to suit plant conditions. The capacity of each bin is an amount fixed by the user to suit specific requirements.

The accompanying illustration shows a battery of 26



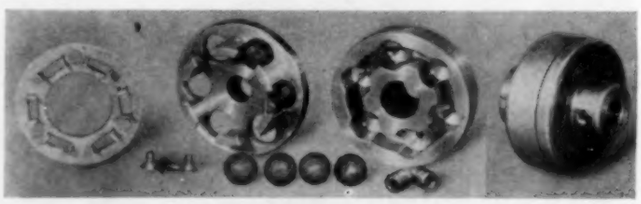
Battery of Richardson Chutes with Control Gates at the Manhattan Rubber Manufacturing Company's Plant

bins with 52 material chutes and control gates installed in the compounding room of the Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., at Passaic, N. J. A total of 45 bins and 90 chutes are installed in this plant.

Rubber Balls in Flexible Coupling

IN the new Edmunds flexible coupling, which is being introduced by the Crocker-Wheeler Electric Manufacturing Company, Ampere, N. J., and which is designed to provide the maximum shock-absorbing qualities for both driving and driven machinery, rubber is put to a new and novel use.

The flange half of the coupling has six cylindrical pockets, all of which are parallel to the shaft hole, as shown in the accompanying illustration. A circular groove connects these pockets. The other half or spider of the



All Parts of the Coupling Displayed

coupling has six projecting lugs between which rubber balls are placed to absorb the shocks.

When two coupling halves are in place, the balls occupy the flange pockets. As the load being transmitted varies, the lugs on the spider squeeze the balls correspondingly and these provide the resilience needed for absorbing the shocks.

FLEXIBLE COUPLINGS *Applied to Rubber Machinery* DRIVES

Comparison With Corresponding Pin-Type Units Shows Cost 73.7 Per Cent Less to Operate—Performance of Units Installed Since 1925—Inspection Reveals No Appreciable Wear After Six Years of Service

THE use of flexible couplings as compared with the usual pin-type couplings for motor drives, has been made the subject of a recent survey by the A. C. Nielsen Company, industrial engineers of Chicago, Ill., in collaboration with the factory superintendent of one of the larger tire companies. The couplings which were made the basis of the survey, were Fast's flexible couplings, manufactured by the Bartlett-Hayward Company, Baltimore, Md.

The first installation was made on a 60-inch mill line in 1925. Today there are a total of seventeen units on equipment having a total power rating of 3,575 horsepower. Plant records reveal no instance of a Fast's coupling ever having failed in service, nor have maintenance or repairs been necessary, except for a monthly check of oil level, and an annual cleaning and refilling with fresh oil.

The pin-type coupling used up to 1925 required a major overhaul every 18 months, and called for routine oiling once a week. A direct comparison between both types of couplings used on a 250-hp. mill line drive reveals the annual operating expense of the flexible coupling units to be $89.65 lower than that of the others, a reduction of 73.7 per cent. This saving in operating costs is sufficient to return the first cost of the units at an annual rate of 29.9 per cent, or in slightly less than four years of operation.

The first installation of a Fast's coupling in this mill was made early in 1925 on a drive supplying power of three 60-inch roll mills. A year later, after comparing the operation of the new couplings with that of the pin-type units formerly used on this drive, these flexible couplings were adopted as standard. Since that time, Fast's couplings have been purchased exclusively for direct application as well as with equipment with which couplings are supplied.

No Appreciable Wear After 6 Years

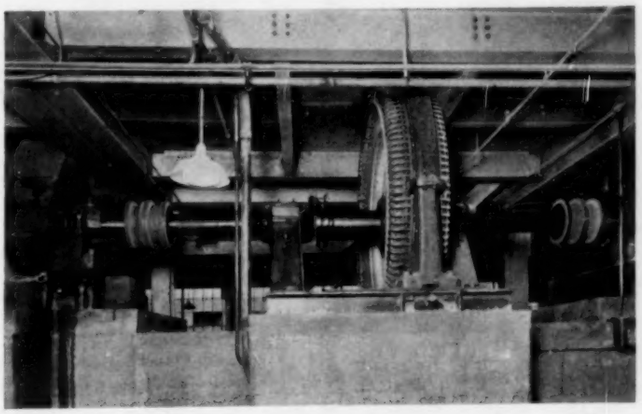
A recent inspection of the first coupling installed in this plant revealed no evidence of appreciable wear after over 6 years of operation, and it is the opinion of plant maintenance men that the unit is as good as when originally installed.

There are now 17 Fast's couplings in service on the various drives throughout this plant, as follows: 60″ mill line, 2; motor gear, 1; No. 27 Banbury mixer, 1; No. 11 Banbury mixer, 2; tread calenders, 5; mold filler, 1; 84″ mill line, 1; between 84″ and 60″ mills, 1; plasticator, 1; calender, 1; water pump, 1. Power transmitted varied from 25 to 600 horsepower and at speeds from 90 to 3400 r.p.m.

The couplings now serving the No. 11 Banbury mixer were applied in January, 1929. The installation includes two No. 11 Banbury mixers driven by a single 300-hp. motor located between the two mixers. Power is transmitted to the shaft of each mixer through a No. 7 coupling. The load on the couplings varies greatly, being at a maximum when a new batch of rubber stock is placed in the mixers for break-down, and tapering off gradually during the mastication.

The No. 27 Banbury mixer receives power through a No. 10 coupling installed in October, 1925.

The 84-inch mill line served by a No. 8 Fast's coupling is a relatively recent installation, being placed in operation during January, 1929. These mills are used for masticating and mixing various rubber stocks, subjecting the coupling to considerable variation in load.



Fast's Flexible Couplings in Service

The couplings formerly used were of the pin-type, and required a major overhaul, involving the replacement of 16 to 22 pins, on an average of once in 18 months. A number of years ago, one of the pin-type couplings failed during the busy season when all units were keyed up to maximum production. The failure occurred late in the afternoon, and by putting on extra men and working them overtime, repairs were made without holding up other departments. Had the failure occurred earlier in the day, the delay would have been much more serious. Spare sets of pins for these couplings were always kept on hand for just such an emergency.

The pin-type couplings required routine inspection and oiling once a week.

During over six years of service, none of the flexible

Comparative Operating Costs

Pin-Type vs. Fast's Flexible Couplings

General Data	*Pin-Type Coupling*	*Fast's Coupling*
Coupling size	Equivalent	#6
Application	Mill line	Mill line
Motor rating	250 hp.	250 hp.
Drive speed	90 r.p.m.	90 r.p.m
Cost of coupling, installed	$406.00	$300.00
Replacement parts inventory—22 pins at $4.50	$ 99.00	
Annual Fixed Charges		
Depreciation (15-year life)	$ 27.07	$ 20.00
Average interest @ 6%	12.99	9.60
Interest on replacement parts inventory at 6%	5.94	....
Total annual fixed charges	$ 46.00	$ 29.60
Annual Maintenance Expense		
Cleaning and repairing pin-type unit— (once every 1-½ years)		
Labor—6 man-hr. @ $.80 ÷ 1.5 yr.	$ 3.20	
Material—22 pins @ $4.50 ÷ 1.5 yr.	66.00	
Cleaning Fast's unit (once a year)		
Labor— man-hr. @ $.80		$ .80
Material—1 quart Oil @ $.60/gal.		.15
Routine oiling—		
15 min./week, or 13 man-hr./year @ $.50	6.50	
15 min./month or 3 man-hr./year @ $.50		1.50
Total annual maintenance expense	$ 75.70	$ 2.45
Total Annual Operating Expense		
Fixed charges plus maintenance	$121.70	$ 32.05
Annual Savings		
In fixed charges ($46.00—$29.60)	$ 16.40	(35.7%)
In maintenance ($75.70—$2.45)	$ 73.25	(96.7%)
Total annual savings	$ 89.65	(73.7%)
Return on investment ($89.65—$300.00)	29.9%	

couplings has ever failed in service nor have any repairs been necessary. The couplings are cleaned and filled with fresh oil once a year, and oil levels are checked each month.

To afford a comparison between the relative costs of operating both types of couplings, the 250-hp. mill line drive has been analyzed with regard to coupling expense. The calculation of operating costs will be found in the accompanying table.

Annual fixed charges include depreciation and average interest based on an expected 15-year life for both types of equipment, and interest at 6 per cent on the replacement parts inventory carried for the pin-type coupling. A comparison of total annual fixed charges reveals a saving of $16.40 in favor of the Fast's units. This saving represents a reduction of 35.7 per cent.

Annual direct maintenance expense totals $75.70 for the pin-type units, and $2.45 for Fast's, indicating an annual saving of $73.25 in favor of the latter.

Combining fixed charges and maintenance expenses, the flexible coupling is found to cost $89.65 less per year to operate. This reduction of 73.7 per cent in annual operating cost is sufficient to return the first cost of the couplings at the rate of 29.9 per cent a year, or once in slightly less than four years of service.

However, any treatment of coupling costs must include consideration of the expense incurred through a forced shut-down resulting from a coupling failure. Although the actual cost of such a shut-down does not readily lend itself to calculation, it may well be considerably greater than the direct saving in operating cost developed in the accompanying table.

Ford's Brazilian Project

RELIABLE news as to the actual developments going on at the Ford Rubber plantation concession in the upper Amazon valley has been extremely scarce. A great deal of it has been colored with considerable pessimism. But now comes a story appearing in *The Review of South and Central America* which makes such discouraging tales appear to be devoid of foundation. The article, which quotes an interview with Archie Johnson, manager of the Ford company at Para, goes on to say that a well designed village, with modern comforts has already been completed and another town farther into the interior is being projected. At the same time clearing and planting of rubber is continuing at the rate as stipulated in the terms of the concession.

Actually, about 1,500 men are at work on the plantation and while no more labor is coming in at the present time, further contemplated building will call for additional help soon. It is estimated that the Ford company has already expended $7,500,000 on the project.

A recent event of important significance was the special visit paid on March 21 by Captain Magalhaes Barata, the Federal Interventor in the State of Pará. Leaving Pará at 9:30 a. m. in a Panair seaplane, he reached Santarém, 450 miles distant, at 2:30 p. m. After a short stay at this town, he left again for Fordlandia, arriving at 4:30 p. m.

This important official, who exercises dictatorial powers, inspected every detail of the works of construction and plantation, and, more important still, in view of the labor troubles which gave rise to rumors of the abandonment of the estates, addressed the workmen while at their evening meal. He counselled them to maintain order and discipline, and to assist with their labor in the creation of the vast properties which owed their origin to the initiative of the Ford organization in the State of Pará.

On his return to Pará the following day, the Interventor received the representatives of the press at the palace and expounded the impressions which he had personally received from his visit to the estates of the Ford company, to which he requested them to give the utmost publicity.

Describes Trip to "Fordlandia"

He described the various episodes of his trip to Fordlandia, and the sections he had visited, the departments which he had been able to examine and the buildings of the company, which were all up-to-date in every respect. Visiting the chief settlement, he said he had been amazed at the water-works, which supply abundant, clear and pure water to all the inhabitants.

He passed through the men's sleeping quarters, the streets of houses for the overseers and their families, the hospital, office, school and canteens, where he was able to assure himself of the excellent quality of the food supplied to the laborers.

After examining the remaining installations, he halted at the electric power-house and at the saw-mills, which fulfilled all the technical needs, and then visited the actual work in progress, where clearing is still being carried on, and was able to see the logs being brought to the saw-mills on the railway constructed some months ago by the company.

With reference to the order, hygiene and discipline of the laborers, he was able to note the care bestowed upon them by the directors and the overseers, while the medical officer and those engaged in prophylactic and first-aid services were ready to be called upon at any hour of the day and night.

This gesture of the Interventor has brought about a new footing in the relations between the State Government and the Ford Company, which is now expected to co-operate on even more friendly terms.

Rubber Industry Shipments Lower in First Quarter

Crude Rubber Consumption Gains Over Last Three Months of 1930 But Is Lowest for Any First Quarter in Seven Years

EFFECTS of the general depression in business were reflected in the operation of the rubber manufacturing industry in the United States during the first three months of 1931. While the domestic consumption of crude rubber in January, February and March showed a seasonal gain of 24 per cent over the last three months of 1930, it marked the lowest total for any first quarter of the year since 1924. Rubber goods shipments were the lowest for any quarter in several years.

The actual value of all shipments of manufactured rubber products during the period totaled $155,003,000, as compared with $218,315,000 in the first three months of 1930. First quarter shipments in 1929 amounted to $274,050,000 and in 1928 to $279,267,000.

Tires, tubes and tire repair materials, as usual, comprised the greater part of the total sales value of all rubber goods. The value of these items alone reached a figure of $99,281,000, as against $55,722,000 for all other rubber products. Druggist sundries, medical and surgical rubber goods, sporting goods, toys and novelties, and miscellaneous and unclassified items were the only groups to show an increase in sales over the first quarter of last year.

In amount of crude rubber used, tires, tubes and tire repair materials absorbed 74,557 long tons out of a total of 89,652 long tons consumed by the entire industry in the first quarter. Total crude rubber consumption in the preceding quarter was 72,020 long tons and in the first quarter of 1930 amounted to 101,610 long tons. The same classifications of rubber products that showed gains in shipments also recorded increases in crude rubber consumption over the like period of 1930 and, in addition, increases were shown by insulated wire and insulating compounds and heels and soles.

Observers in the trade have been impressed by the heavy gain in factory production, as measured by crude rubber consumption, over the last quarter of 1930, which was considerably larger than the customary seasonal advance. This, however, is partly accounted for by the fact that consumption in the final quarter of last year was the lowest for any three-month period since 1923 and was, therefore, far below normal.

The figures in the table below are estimated by the Rubber Manufacturers Association to represent 92 per cent of the American industry, but those quoted in this article have been raised to represent 100 per cent of the domestic industry.

Comparative Table of Value of Rubber Goods Shipments from Manufacturing Plants and the Amount of Crude Rubber Consumed for the Past Quarter and Previous Quarters

Total Sales Value of Manufactured Rubber Products Shipped

Thousands (,000) omitted.

	Product	1Q-31	4Q-30	1Q-30	1Q-29	1Q-28
	Tire and Tire Sundries					
1	Auto and Truck Casings	$75,317	$77,722	$105,939	$141,240	$143,640
2	Auto and Truck Tubes..	11,384	11,368	15,619	20,558	22,979
3	Motorcycle Casings and Tubes	99	124	243	318	452
4	Bicycle Casings and Tubes	490	532	534	584	561
5	Aeroplane Casings and Tubes	83	70	83	147	146
6	Solid and Cushion Tires	1,434	1,568	2,374	4,253	6,157
7	All Other Solid Tires....	186	231	335	577	545
8	Tire Sundries and Repair Material	2,346	2,699	3,712	4,376	5,135
	TOTAL—Tires and Tire Sundries	$91,339	$94,314	$128,839	$172,053	$179,615
	Other Rubber Products					
9	Mechanical Rubber Goods	$17,358	$16,801	$24,149	$28,835	$26,194
10	Boots and Shoes	11,148	25,228	20,148	20,986	19,216
11	Insulated Wire and Insulating Compounds....	4,719	5,732	7,089	8,199	8,404
12	Druggist Sundries, Medical and Surgical Rubber Goods	1,774	2,147	1,626	2,230	1,979
13	Stationers' Rubber Goods	425	459	585	682	755
14	Bathing Apparel	487	162	709	653	600
15	Rubber Clothing	691	1,291	1,083	1,362	1,839
16	Automobile Fabrics	1,201	1,012	2,230	2,447	2,516
17	Other Rubberized Fabrics	1,323	1,872	1,506	1,739	1,208
18	Hard Rubber Goods.....	949	1,546	1,257	1,587	1,551
19	Heels and Soles.....	4,391	4,752	5,945	5,774	6,483
20	Rubber Flooring	560	861	1,029	892	1,108
21	Sporting Goods, Toys and Novelties	2,315	1,604	1,793	1,578	1,840
22	Miscellaneous, not included in any of the above Items	3,923	3,073	2,862	3,109	3,619
	TOTAL—Other Rubber Products..	$51,264	$66,540	$72,011	$80,073	$77,312
	GRAND TOTAL—All Products	$142,603	$160,854	$200,850	$252,126	$256,927

Crude Rubber Consumed—Long Tons

	Product	1Q-31	4Q-30	1Q-30	1Q-29	1Q-28
	Tires and Tire Sundries					
1	Auto and Truck Casings	55,912	41,599	61,642	82,393	62,036
2	Auto and Truck Tubes..	10,670	8,528	12,384	15,736	13,981
3	Motorcycle Casings and Tubes	38	35	96	64	105
4	Bicycle Casings and Tubes	178	192	345	248	231
5	Aeroplane Casings and Tubes	15	15	15	27	12
6	Solid and Cushion Tires	872	1,060	1,577	2,209	2,925
7	All Other Solid Tires....	72	53	72	182	135
8	Tire Sundries and Repair Materials	836	802	1,149	1,232	1,446
	TOTAL—Tires and Tire Sundries	68,593	52,284	77,280	102,091	80,871
	Other Rubber Products					
9	Mechanical Rubber Goods	4,319	4,117	4,628	5,783	4,472
10	Boots and Shoes.....	2,234	3,226	4,944	3,827	4,305
11	Insulated Wire and Insulating Compounds....	1,054	1,140	999	1,071	796
12	Druggist Sundries, Medical and Surgical Rubber Goods	471	408	318	537	309
13	Stationers' Rubber Goods	323	295	386	355	343
14	Bathing Apparel	199	92	254	284	253
15	Rubber Clothing	210	267	312	283	354
16	Automobile Fabrics	167	155	231	318	272
17	Other Rubberized Fabrics	452	595	471	452	252
18	Hard Rubber Goods.....	207	267	279	339	251
19	Heels and Soles.....	2,194	1,711	1,952	1,535	1,412
20	Rubber Flooring	188	262	261	257	215
21	Sporting Goods, Toys and Novelties	699	479	5111	429	357
22	Miscellaneous, not included in any of the above Items	1,170	960	655	719	811
	TOTAL—Other Rubber Products..	13,887	13,974	16,201	16,189	14,402
	GRAND TOTAL—All Products	82,480	66,258	93,481	118,280	95,273

EDITORIAL COMMENT

Vanquish "Business Blues"

THE rubber manufacturing industry within the United States is coming back. Tangible evidence and unmistakable signs point encouragingly to a gradual upturn. The absorption of crude rubber by manufacturers in the United States for the month of May was the highest for any month since May a year ago and is estimated by the Rubber Manufacturers Association to total 37,817 tons, an increase of 13.5 per cent over April. Shipments of pneumatic casings also continue to show substantial gains, month by month, since early in the year. April showed an increase, in this regard, of 19.7 per cent and was only 3.1 per cent under the figure for April, a year ago.

Colonel Leonard P. Ayres, of the Cleveland Trust Company, strikes an optimistic note for industry as a whole, in his latest economic survey of the industrial situation and particularly denies any reason for subscribing to the "business blues". He says:

"Business sentiment has made a triple bottom in this depression. Three times, so far, the spirit of pessimism has been allowed briefly to dominate the judgment of the business community, and on each occasion it has been promptly displaced by saner counsels, and more wholesome thinking. The first wave of unreasoning gloom came in November of 1929, when the illusions of the new era were swept down in wreckage by the collapse of stock prices. A return of the defeatist spirit came last December, when the difficulties of banks and brokerage houses culminated. May marked the third plunge into melancholy.

"Three times ought to be enough, even in a major depression. There was no very good reason for this latest attack of the business blues. It is true that the slow advance in business activity, that had been under way since last January, came to a halt, but that is not a sufficient excuse for discouragement, since the bottoms of all depressions are marked by the periods of brief advances and recessions. No important failures occurred and no new unsound spots in banking or industry were disclosed. Nevertheless security prices melted steadily away.

"It was not until the opening days of June that the long-awaited rally arrived, and restored more nearly normal attitudes. Present prospects are clearly more hopeful than business sentiment was willing to admit a short time ago. The agricultural outlook is exceptionally good in nearly all parts of the country. The danger of a continuation of the drought has definitely disappeared. A good many corporations are so fully convinced that the security markets had over-discounted hard-times that they are using some of their funds to purchase their own bonds. Some industries are increasing their outputs, because demand has over-run supply, and shortages are developing.

"The business activity index of this company reached in January its low point of 28.3 per cent below normal. It advanced to 25.0 in February, to 23.4 in March, and to 22.7 in April. Similar continuous advances throughout the summer are not to be expected, but it is well to note that considerable recovery has already been attained."

"Stop Profitless Merchandising"

THUS spoke the National Foreign Trade Council, in its final declaration at its 18th Annual Convention, held recently in New York City. The message is particularly applicable to the rubber industry.

An essential necessity of the present economic situation is an advance in commodity prices. Price levels have fallen to the point where profit has been largely eliminated. The chief factor of the present situation is profitless merchandizing. When prices are falling buyers tend to withdraw from the market. It is rising prices that stimulate buying and consumption and a return of prosperous times. Anything, therefore, which tends to postpone recovery in commodity prices, more especially those influences which are unfair and uneconomic in character should be discontinued.

The importance of fair prices cannot be overestimated in influencing the restoration of trade. Sellers cannot expect to obtain fair prices for their own products unless as buyers they are willing to pay fair prices for the commodities and services necessarily to their industry. Competition is unfair both to industry and to the community when price cutting compels the sale of goods at a loss. Basic commodities are being sold at cost or less. Profitless merchandising retards prosperity, and affects the position of the wage earner.

The RUBBER AGE

Published on the 10th and 25th of each month. The Only Twice-a-Month Rubber Publication.

THE PALMERTON PUBLISHING CO., INC.

Editorial Office, 250 West 57th St., New York City

Telephones: COlumbus 5-2923, 5-2924

THE RUBBER AGE is published on the 10th and 25th of each month by The Palmerton Publishing Co., Inc., a New York corporation. P. L. Palmerton, President; Earl D. Osborn, Vice-President and Secretary; Peter P. Pinto, Treasurer. Publication Office, 1-3 Peace St., New Brunswick, N. J. Subscription rates: Domestic, $2.00 a year; Canada, $2.50; foreign, $3.00; single copies, up to 3 months old, 20c.; over 3 months old, 50c. Advertising rates on application.

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THE RUBBER AGE is indexed in *Industrial Arts Index*

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Representatives in all the rubber centers of the United States, Canada, England, France, Germany and the Middle East.

The Rubber Industry's CURRENT NEWS

Financial—Personals—New Rubber Products—
Building Operations—Manufacturing—Exports

RUBBER DIVISION PLANS FOR BUFFALO MEETING

Members of the Rubber Division of the American Chemical Society are completing arrangements for an interesting program in connection with the 82nd meeting of the society to be held at Buffalo, N. Y., from August 30 to September 4. Division meetings will be held on two or more of those days, and a group of important technical papers will be presented at that time.

The headquarters of the society for the Buffalo session will be at the Hotel Statler, but the meetings of the Rubber Division will be conducted at the Hotel Lafayette. On the morning of September 3 the members of the Rubber Division and the society as a whole will be invited to make inspection trips to the Buffalo Foundry & Machine Company, makers of vulcanizers and other rubber factory equipment, and the Dunlop Tire & Rubber Company.

PLASTIC SUGAR PRODUCT MAY BE RIVAL TO RUBBER

A new plastic substance made from sugar, the result of nine years' experimentation, now is being produced in New York in the various forms of a hard, insoluble, glasslike mass, white transparent rubber, cellulose, and transparent package wrapping material, according to an announcement made June 9. Arthur S. Ford, a chemical engineer, and Ben Grey, an industrial consultant, developed the material and claim it can be produced for about 9½ cents a pound now.

As explained by Mr. Ford, the new material is based on the discovery of a method of polymerizing sugar. "Treated one way," he stated, "it freezes into a hard glasslike mass; vary the procedure and it becomes a water-white transparent rubber; another way it becomes a cellulose film, whiter and more brilliant than celluloid and a substance that will not burn."

Clothing of spun sugar, polymerized by the Ford process, was predicted in the publicity statement, including shoes of sugar leather with heels of sugar plastic.

Goodyear Trenton Warehouse

The Goodyear Tire & Rubber Company has leased a large warehouse at 533 Adams Avenue, Trenton, N. J., and is moving its wholesale business to that address, which is in the centre of the local "automobile row." The warehouse was leased from the D. G. Nicholas Company.

No Mail Order Prices Change

Automobile tire prices quoted by Sears, Roebuck & Company and Montgomery Ward & Company, leading mail order houses, in their midsummer flyer catalogues show no change from those in the 1931 spring and summer catalogues. The Sears Roebuck flyer states that out of 187 actively sold brands of tires, one in each ten sold at retail is an Allstate.

Wilkins to Use U. S. Footwear

Sixty pairs of special waterproof footwear made in the Naugatuck, Conn., plants of the United States Rubber Company have been sent to Sir Hubert Wilkins for use on his submarine expedition to the North Pole this summer. Sir Hubert visited the Naugatuck factories several weeks ago and is now at Ireland en route to the pole.

Monsanto Pays Dividend

The Monsanto Chemical Works will pay the regular quarterly dividend of 31¼ cents a share on July 1 to common stockholders of record June 10. Officials stated that second quarter earnings should be at least as much as in the first quarter, when net profit totaled $255,378 after charges and taxes, equal to 59 cents a share on the capital stock. Edgar M. Queeny, president, said that March, April and May showed a substantial upturn in orders received and that the large amounts of money ploughed back into the business in recent years were making possible economies which have become noticeable. The Graesser-Monsanto division in England is reported to be making a profit after having operated at a loss for several years.

ST. JOSEPH LEAD COMPANY APPOINTS DISTRIBUTORS

The St. Joseph Lead Company has established warehouse stocks of St. Joe zinc oxides in Trenton, N. J., Boston, Mass., and Los Angeles, Cal., for the convenience of the local consuming industries. The company has appointed as local sales distributors H. M. Royal, Inc., Oakland and Norman Avenues, Trenton, N. J.; William D. Egleston Company, 133 Pearl Street, Boston, Mass.; and the C. P. Hall Company of California, 1340 East 6th Street, Los Angeles, Cal.

In addition to the above, the company also maintains its own zinc oxide district sales office in the Oliver Building, Pittsburgh, Pa., in charge of R. L. Cathcart.

TIRE COMPANIES AGREE ON ADVERTISING TERMS

Leading tire manufacturers and distributors voluntarily agreed early this month upon a set of definitions drawn up by the National Better Business Bureau with the purpose of clearing up their advertising and selling practices. This action is in compliance with a resolution adopted at a trade conference held last September at Akron, O., and in line with further suggestions made at a second conference in March.

Under the definitions, for example, a breaker strip can not be counted as a ply because it has a lower cord count and performs a different function. A first line tire "is the distributor's best standard size, four- or six-ply, carries the manufacturer's or distributor's name and guarantee. It is lower in price than the so-called super tires of the same brand but higher than the second or third line of the manufacturer." The standards adopted also define such terms as "bead," "ply," "breaker strip," "heavy duty" and "super duty" tires.

VOORHEES RUBBER SUING TO RESTRAIN ITS AGENTS

Seeking to restrain the use of the trade name "Voorhees" for alleged substitute products, the Voorhees Rubber Manufacturing Company, Jersey City, N. J., has commenced an equity action in Common Pleas Court against the Voorhees Rubber Manufacturing Company of Pittsburgh; the Consolidated Rubber Corporation, formerly the Molded Hose & Rubber Company, and Frank M. Succop of Pittsburgh.

According to the plaintiff, the defendant concerns made an agreement on October 1, 1923, to sell the plaintiff's products. In the last few years it has been observed, according to the suit, that the plaintiff company's products dropped sharply in sales, and it also is alleged to have been discovered that selling to the trade was being done, under the names of some of the plaintiff's goods, of certain inferior products of competitors.

Pharis Adds 100 Workers

The Pharis Tire & Rubber Company, Newark, Ohio, on June 4 added more than 100 men to its payroll, making nearly 600, and is working day and night in three shifts. Indications are that this increased production will continue for some time, according to company officials.

V. L. SMITHERS TO MAKE MICROSCOPIC STUDIES

V. L. Smithers, Inc., engineers, have just added a complete microscopic outfit to their laboratories at 811 United Building, Akron, O., for the purpose of studying pigments and their dispersability in rubber and in order to operate this new department satisfactorily have increased their staff by the addition of W. J. Latimore, formerly with the Thermatomic Carbon Company, Pittsburgh, Pa. Mr.

W. J. LATIMORE

Latimore had worked with the Thermatomic company as their microscopist.

Much can be learned about different type stocks and important characteristics of different type pigments by the use of the microscope, according to V. L. Smithers, Inc. To give the rubber trade some indication as to what can be shown with the microscope, the firm is now preparing a prospectus covering two series of stocks, one in which the milling time has been varied over a considerable range, the other in which the carbon content has been varied over a wide range. Physical tests will be made on these stocks and in addition photomicrographs will be made in order to indicate what differences can be seen. Upon completion of this work, the booklets will be distributed to the rubber trade.

RUBBER STOCKS ADDED BY CONTINENTAL SHARES

The release on June 9 of a report by Continental Shares, Inc., covering the first four months of the year revealed the addition of rubber company securities to its portfolio. The rubber section of the Continental company's list of securities showed an increase of 218 shares of Goodyear Shares, Inc., a holding company for the stocks of the Goodyear Tire & Rubber Company. At the same time a decrease of 47,632 shares of United States Rubber Company common was shown.

A balance sheet of Goodyear Shares, Inc., shows assets that include 285,105 shares of Goodyear Tire common listed at $22,808,400. The market value April 30 was $10,940,904. Liabilities include $10,000,000 of notes payable. The statement does not include the May 1 Goodyear dividend totaling $213,828.

Arthur J. Huston

Arthur J. Huston, organizer of the Aetna Rubber Company and vice-president of that organization until his retirement two years ago, died suddenly on June 2 at Cleveland, O., where he had made his home. He was 61 years old.

Mr. Huston is survived by his widow, Mrs. Alice Demarius Huston. Funeral services were held on the afternoon of June 5.

Oliver S. Hart

Oliver S. Hart, well known as a rubber company executive from 1901 to 1929, died at his home in Akron, O., on June 7 at the age of 70. Mr. Hart, who started his career by founding a profitable book shop at Cleveland, originally came to Akron in 1888 to act as business manager of the *Beacon Journal*.

He resigned that position in 1901 to become a director and executive of the Diamond Rubber Company, remaining until the plant was acquired by the B. F. Goodrich Company in 1912. After five years of retirement in Cleveland, Mr. Hart returned to Akron to become affiliated with the Goodyear Tire & Rubber Company. He left in 1921 with F. A. Seiberling and became cashier of the Seiberling Rubber Company, a position which he held until his retirement two years ago.

Mr. Hart was nationally known as a collector of postage stamps. He is survived by his widow, one son and three grandchildren. Funeral services were held June 9.

Dismiss Firestone Complaint

The Interstate Commerce Commission on June 8 dismissed a complaint brought by the Firestone Tire & Rubber Company against existing rates on rubber tires and tubes to points in the south. The commission ruled that present freight rates were not unreasonable or otherwise unlawful. Shipments involved in the complaint were made from Akron and Barberton.

RUBBER WORKERS END STRIKE AT MISHAWAKA

After appointing a committee to effect a satisfactory settlement of the wage difficulties that caused them to go on strike on May 18, 2,800 employees of the Mishawaka Rubber & Woolen Manufacturing Company, Mishawaka, Ind., returned to work on June 10. The termination of the strike was announced officially by E. J. W. Fink, president of the company.

Conditions accepted by the strikers at a mass meeting June 8 were: first, the factory does not recognize the Rubber Workers' Union which started the strike; second, no discrimination will be shown against union or non-union workers; third, the factory will reinstate 18 union workers discharged a month ago because of strike activities; and, fourth, the employees may elect a permanent committee to confer with factory officials on their problems. Reports that the management of the company was to be suspended appear to be without foundation.

TO MERGE FOOTE GEAR AND DODGE MFG. COMPANY

Plans have been announced for the consolidation of Foote Bros. Gear & Machine Company and the Dodge Manufacturing Corporation into a $10,000,000 Dodge-Foote Corporation that would represent the largest unit in the world engaged in the manufacture of machinery for the mechanical transmission of power.

Consolidation would be effected through the exchange of stock and the assumption of liabilities of both companies, requiring no public financing, according to a letter to stockholders outlining the plan. Incident to the merger, a funding arrangement would be concluded for the Foote Bros. obligation to banks totaling some $800,000, it was disclosed.

Kelly Tire Sales Gain

The Kelly-Springfield Tire Company reports that April sales were 28 per cent larger than those in March, while March sales were 40 per cent larger than February. These sales increases have resulted in a gradual step-up of production at the factory at Cumberland, Md. Economy plans instituted by the new management are reducing distribution and selling costs.

MIXED TREND REVEALED BY RUBBER SECURITIES

Stocks of the leading manufacturing companies rose and fell with the rest of the market during the course of the past fortnight. Gains were shown at the end of the period by Firestone common and preferred, Mohawk and United States preferred, while net losses were sustained by Fisk, Goodrich, Goodyear, Pirelli and United States Rubber common. Fisk and Pirelli sank to new lows for 1931 or longer in the two weeks of trading.

Closing prices of shares of the principal rubber manufacturing companies, compared to the close on June 4 and to the high and low thus far in 1931, are shown in the following table:

	Last Price		—1931—	
	June 19	June 4	High	Low
Aetna	—	—	5	3⅝
Ajax	—	—	½	¼
American Hard Rubber	—	—	35¼	30
Dayton "A"	—	—	—	—
Falls	—	—	—	—
Faultless	—	—	37	35
Firestone	18⅝	17	21½	13
do. 6% pfd.	60½	59½	63⅜	56¼
Fisk	⅝	½	⅞	⅜
do. 1st pfd.	1½	1½	3	1
General	—	—	140	80
do. pfd.	—	—	87½	83
Goodrich	10¼	10⅜	20⅞	8¼
do. pfd.	—	—	68	35
Goodyear	33	36⅜	52¾	30⅝
do. 1st pfd.	—	—	91	71
India	—	—	13½	8¾
Intercontinental	—	—	4½	1¾
Kelly-Springfield	1⅝	1½	3½	1⅜
do. 6% pfd.	—	—	45	35
Lee	—	—	4¾	2¼
Mohawk	4⅛	3⅛	8	3
do. pfd.	—	—	35	25
Norwalk	—	—	1½	½
Pirelli	29½	—	33¾	28¼
Raybestos-Manhattan	—	20⅛	29½	17½
Seiberling	—	9	10½	4⅝
do. pfd.	—	50	50	32
U. S. Rubber	11¾	12¼	20⅝	10⅛
do. pfd.	22½	21	36⅛	17

END OF FREE LIGHTERAGE OPPOSED BY U. S. RUBBER

Opposition to the abolition of free lighterage in New York Harbor was voiced on June 9 by the United States Rubber Company through its general traffic manager, George F. Hichborn, at the hearing before the Interstate Commerce Commission.

Mr. Hichborn said that if the petition of the complainants in the lighterage suits succeeded, it would be harmful to both sides of the port, cause traffic to be diverted to other ports and cause his company to have to reroute its shipments in order to reach certain steamships. The concern has plants at Passaic and Jersey City, Brooklyn and in seven other states.

The rubber company is perfectly content to pay present rates for all its products brought from the Middle West, as it thought it an advantage to have one equalized rate throughout the metropolitan area.

Mr. Hichborn stated that his company had no complaint to find with the rate adjustment from points 100 miles or more removed from the metropolitan district so far as the relationship of New Jersey points to New York points are concerned.

"We have never felt that we suffered any injustice on this account in paying our Western factories the same rates to consignees to northern New Jersey as apply to consignees located in New York or Brooklyn," he said.

"We feel that a parity of rates to the metropolitan district is all right. As a matter of fact, in marketing in the metropolitan area, including both New Jersey and New York, the products we manufacture at our Middle West plants, we consider it to our advantage to have equal freight rates throughout the area, so that our products can be sold without considering the freight rate to one section, as compared with the freight rate to another."

The witness went on to say that he did not consider the company handicapped in any way through the present adjustment of freight rates, which are the same to the New Jersey plant as to its competitor plant in Brooklyn.

Maumee Rubber Plant Sold

The Maumee Valley Rubber Company factory building at Toledo, O., was sold last month at a sheriff's sale to the attorneys of the plaintiff. The company, formed five years ago to reclaim rubber and manufacture rubber tiling and other products, announced plans in 1929 to move to Muscle Shoals, Ala.

Goodyear Sued in Bus Crash

Claiming to have suffered broken necks in a bus accident resulting from a tire blowout, two Scranton, Pa., women and their husbands brought suit in federal court last month against the Goodyear Tire & Rubber Company for $169,907. The petitions claim that the women were passengers on a Detroit-Buffalo bus when a tire blew out, upsetting the vehicle. Goodyear is named defendant in the actions on the theory that the tire may have been defective and caused the accident, while the transportation company is not mentioned.

Names in the News

E. S. Boyer, president of the American Hard Rubber Company, sailed June 19 on the Majestic for a seven-week business trip through Europe. Mr. Boyer will return about the middle of August.

Arthur W. Carpenter, manager of the testing laboratories of the B. F. Goodrich Company, has been elected a member of the executive committee of the American Society for Testing Materials. A native of Wellsville, N. Y., Mr. Carpenter was graduated from the Massachusetts Institute of Technology and is a member of the American Chemical Society and the American Institute of Chemical Engineers. From 1915 to 1918 he was in the Akron water department, later was in the development department of the Goodyear Tire & Rubber Company, and since 1928 has held his present position with Goodrich.

Dr. Sidney M. Cadwell, director of the product development division of the United States Rubber Company tire department, addressed the Detroit Engineering Society early this month.

Richard H. Geier, president and general manager of the Keystone Rubber Company, Chicago, Ill., has returned to his offices following a recent operation at a local hospital.

P. J. Kelly, advertising manager of the B. F. Goodrich Company, returned to his office on June 8 after a month's absence following an operation.

D. J. Quammen has been appointed manager of the Philadelphia district office of Cutler-Hammer, Inc., manufacturers of electric motor control and allied apparatus. Mr. Quammen, who has been connected with that office for five years as a sales engineer, succeeds F. J. Burd, who has been made assistant manager of the company's Chicago office.

T. G. Graham, first vice-president of the B. F. Goodrich Company, has resumed his duties after several months of recuperating from an operation.

Fred M. Harpham, vice-president of the Goodyear-Zeppelin Corporation, Ward T. Van Orman, prominent Goodyear balloonist, and J. C. Hunsaker, vice-president of the International Zeppelin Corporation, acted as hosts to Mayor Howard W. Jackson of Baltimore and five of that city's civic officials on June 8. The Baltimore men came to Akron to confer with Goodyear officials on making their city the terminus of the proposed trans-Atlantic dirigible line.

George M. Moffett, director and member of the executive committee of the B. F. Goodrich Company, was elected a director of the Fox Film Corporation early this month.

George C. Lewis, president of the Darco Sales Company and general manager and vice-president of the L. Martin Company, was recently installed as the new president of the Chemists' Club, New York City. In addition to the positions mentioned, he is a director of the Columbian Carbon Company and technical director of the United Lamp Black Works. Technically, he has specialized in the combustion of hydrocarbons, particularly in carbon and lamp black.

R. D. Bean, formerly manager of the engineering development department of the Brown Instrument Company, Philadelphia, Pa., has been made chief engineer of that company. Mr. Brown is well known for his extensive field investigations covering many applications of industrial measuring instruments.

John E. Noonan, production superintendent of the processing division of the B. F. Goodrich Company, and T. M. Taylor represented that company at the National Foremen's Association convention at Dayton, O., on June 12 and 13.

William F. O'Neil, president of the General Tire & Rubber Company, was a passenger in the country's largest land plane, a four-motored Fokker, early this month. Captain Eddie Rickenbacker flew the plane to Akron for the purpose of taking Mr. O'Neill for an air trip over northern Ohio. The ship can accommodate 32 passengers.

Henry Schippel, tire designer, attended the seventh Army and Navy conference on aeronautical standards at the naval aircraft factory at Philadelphia, Pa., on June 8 as a representative of the B .F. Goodrich Company. He participated in sessions devoted to determining standards for airplane tires, wheels and brakes.

Samuel Broers, vice-president and genmanager of the Firestone Tire & Rubber Export Company, sailed on the liner Rotterdam for Europe on June 5, together with Mrs. Broers and their son. They will make a tour calculated to take them to every principal city on the continent and will then establish headquarters for the summer in the Netherlands.

William C. Young, sales manager of the Goodyear-Zeppelin Corporation, spoke before the Men's Club of Christ Church, Kent, O., on June 8 on the subject of "Transportation by Air."

Frederick A. Washburn, of the Hood Rubber Company, Watertown, Mass., was elected vice-chairman of the engineering section of the Massachusetts Safety Council at a meeting in Boston last month. J. C. Neilson, of E. I. duPont de Nemours & Company, was named a member of the executive committee for a two-year term.

Rubber News Around the World

DUTCH RUBBER REPORT STILL BEING AWAITED

Rumors that the report of the Dutch Rubber Committee, appointed some time ago to make a survey of the rubber industry for the purpose of recommending a plan of rehabilitation, has been laid before the Minister of the Colonies were denied earlier this month. The committee is confining its efforts to preparatory work, such as collecting figures and other data, and several weeks may be required before its report will be ready.

Meanwhile, Dr. Bernhard, Chief of the Department of Agriculture, Industry and Commerce of the Dutch East Indies, is reported to have suggested that the only remedy would seem to be the sale of crude rubber to large tire manufacturing companies in the United States at a fixed price that would leave just a small margin of profit to the rubber industry.

Amsterdam cables on June 11 gave as the first intimation of what the committee will recommend a report to the effect that a maximum native production of 90,000 tons would be proposed, along with an estate production amounting to 75 per cent of the 1929 output. It meant no restriction for the natives on their present productive basis, but holds Asiatic production in check in the event of a rise in price. The Government (Colonial Office) will probably approve the plan and then producers will invite the British R. G. A. to apply a similar plan to the British territories.

Estate production in the Dutch East Indies amounted to 154,154 tons in 1929, and 152,495 tons in 1930. The committee therefore proposes to cut Dutch estate outputs down to 115,575 tons. Adding native output of 90,000 tons, total D. E. I. rubber production is held at 205,575 tons. It is possible that the committee has recommended native exports of 90,000 tons, and not production. How the natives could be held down on a production basis is difficult to conceive, according to trade authorities.

ASK MARK OF ORIGIN ON FOOTWEAR FOR BRITAIN

The United Kingdom Board of Trade has referred to the standing committee set up under the provisions of the merchandise marks act, 1926, an application to require the following goods imported into the United Kingdom to bear a mark of origin:

Boots, shoes, and slippers made wholly or mainly of rubber; overshoes (including galoshes and snowboots) with or without heels, made of rubber or rubber in combination with textile materials; rubber-soled footwear with uppers made wholly or mainly of textile materials (including paper) where the soles are not stitched to the uppers; and footholds made wholly or mainly of rubber.

Dunlop Factory at Kobe

The Dunlop Rubber Company, Ltd., recently opened its new factory at Kobe, Japan, covering 28,000 square yards of floor space and employing 1,600 operatives. The plant is to produce automobile, bicycle and ricksha tires, hot water bottles and other rubber goods. The machinery is of the most modern type throughout, including eight calenders.

Exchange Differentials

The adjustment committee of the Rubber Exchange of New York on June 15 fixed the price differentials between the various grades of Hevea plantation rubber which shall prevail on all deliveries against the old "A" contracts for the month of July as follows: off quality first latex crepe at one-tenth of a cent a pound; good F. A. Q. ribbed smoked sheets at twenty-five one-hundredths of a cent a pound; ordinary F. A. Q. ribbed smoked sheets at four-tenths of a cent a pound.

Latvian Company Loses $71,197

The Baltic India Rubber Company "Quadrat," largest rubber manufacturing firm in Latvia, has reported for the year of 1930 a loss of 368,898 Lats or $71,197, as compared with the loss of 167,384 Lats or $32,305 in 1929. The "Quadrat" company is capitalized at 7,000,000 Lats or $1,351,000 and has a reserve surplus of 3,300,000 Lats or $636,900. The depression in the Latvian industry is due chiefly to the loss of export outlets for galoshes, principally Poland, in addition to the increased imports of foreign-made galoshes from Russia, Poland, Sweden and Finland.

GOODYEAR TORONTO UNIT HAS GOOD SAFETY RECORD

The plant of the Goodyear Tire & Rubber Company at New Toronto, Ont., had a remarkable safety record last year and came within an accident or two of winning the company's inter-plant safety contest. Some of the departments at New Toronto have practically eliminated accidents.

The tube room accessories department has gone 24 months without an accident; the stock preparation department, which includes bias cutters, chafing strip machines, band building and all bead operations, has not had a lost-time accident in 28 months; the mill room has now operated 24 months without an accident; the inside transportation department has not had a lost-time accident in 24 months.

One entire division, which includes compounding, mixing, calendering, cement house, chemical manufacturing and tube machines, has completed a year without a lost-time accident.

EDISON SUCCESSFULLY VULCANIZES GOLDENROD

Thomas A. Edison terminated his 48th annual winter season in Florida with the announcement on June 15 that he had successfully vulcanized synthetic rubber made from goldenrod. Those associated with Mr. Edison are reported as saying that he soon will construct a large scale extraction factory and plant approximately 1,000 acres of goldenrod on the Henry Ford plantation near Savannah, Ga.

In a brief interview before leaving Fort Myers, Charles Edison, son of the inventor, said that his father's experiments with rubber have passed the preliminary stage and now are in a state of being made commercially practical. He said that rubber extracted from goldenrod and vulcanized has been found to respond as well as ordinary rubber. The only problem remaining unsolved, the inventor's son said, is that of standardization, as one batch of the rubber sometimes differs in quality from others.

Between 6 and 8 per cent of rubber is being obtained by Mr. Edison from Solida Gigantica, a new goldenrod species found in the Everglades. This new discovery has resulted in the inventor discarding the Solidago Leavenworth II species, with which he formerly experimented.

It is Mr. Edison's principal aim to afford the national government an emergency wartime supply of rubber. He plans to give the entire project to the government.

GOODYEAR OF CANADA SALES ABOVE ESTIMATES

The Goodyear Tire & Rubber Company of Canada has started operating on Saturday mornings, thus increasing production moderately. This step was taken in view of the fact that sales have been running above estimates. It is anticipated that no material decrease will be shown in demands during the remainder of the fiscal year.

Production of tires is running at the rate of approximately 5,000 per day, while output of tubes is running at between 4,000 and 4,500 daily. Sales of rubber specialties on the whole are being maintained at about the same level as earlier in the year. There has been a slowing down of the demand for belting but sales of hose and rubber heels have improved.

Malayan Shipments Falling

Malaya will export a total of about 41,000 tons of rubber to all countries this month, according to an estimate cabled to the Rubber Exchange of New York, Inc. During May, the chief producing country exported a gross of 44,200 tons, in April 43,400 tons, and in March the peak export total for the year, 48,500 tons.

Rubber Goods and Specialties

Baldwin Dry Hair Bathing Cap

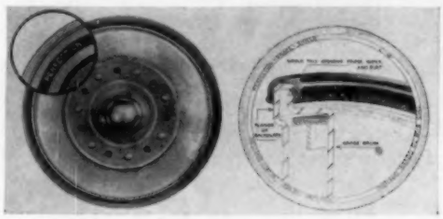
Under the name of the Baldwin Dry Hair Bathing Cap, the Davol Rubber Company, Providence, R. I., is now making a patented head covering with several exclusive features. The patented feature is the outside fold, which can be pulled down, covering all except the tips of the ears, and snugs close

to the head so that the water can not get in. It has no straps or buttons, and nothing to tie. The best quality rubber is used, with reinforced seams that will not break. The cap can not come off. It is made in pure gum for youths and in both pure gum and red rubber for adults.

Servus Runfast Sport Shoe

The greatest seller in the line of the Servus Rubber Company, Rock Island, Ill., for 1931 has been the Runfast model sport shoe. A high rate of production has been maintained on this model since its introduction, and orders for it are now on hand extending as far ahead as next fall. It is a medium

priced shoe, but, according to the manufacturer, embodies all the character, design and appearance of high priced shoes of the line. The upper is made either of suntan duck with Indian head imprint or white duck with cowboy imprint. The trim includes brown saddle strap, toe cap, back stay, lace stay and foxing with suntan toe guard. The sole is of extra thick brown rubber in a special "cut-out" design and is securely vulcanized to the upper fabric.



Perfection Brake Shields

The General Tire & Rubber Company, Akron, O., is introducing to the automotive market a new rubber product known as Perfection Brake Shields which are designed to make internal brakes waterproof and dirtproof. Through use of the new shields the entrance of grit or water will be prevented, the company states, thereby adding to the life of the brake linings and drums and checking rusting of the levers and release springs.

Aside from the actual function of the shields, their introduction is of interest as the latest component of rubber designed for use of motor cars. There has been a constant addition in the number of rubber motor car components in recent years and many more are under development.

"These brake-shields are made of specially-compounded rubber to withstand oil and grease and to give long service," a General Tire statement said. "They can be installed in less than thirty minutes on most cars or trucks having wire or disc wheels and the newer detachable wood wheels, while they can be applied in ten minutes at the time brakes are being relined.

"Even when water is forced against the brake drums under high pressure, when washing a car, the water cannot penetrate between the brake drum and the flange of the internal brakes when they are protected by Perfection brake shields.

"They prevent frozen brakes, slipping or dragging brakes and scored drums. They insure smooth, positive braking power under all weather conditions and greatly increase the life of brake linings. More uniform braking on all brakes is obtained. When brakes are unprotected, grit will chew up the lining on one brake so that all the linings, though part are only partly worn, must be replaced, to secure uniform braking."

To Make New Tire in Sweden

The Andersen tire, recently designed by a Swedish army captain, will be manufactured in Sweden, if present attempts to form a corporation are successful. The company is to be known as A/B Bilring and is to have a minimum capital of 2,300,000 crowns.

The B. F. Goodrich Company, Akron, O., has announced its introduction of a new low pressure airplane tire, lighter in weight than any so far developed.

Bon Dee Echo Golf Ball

The Bon Dee Golf Ball Company, Beard Avenue and Chatfield Street, Detroit, Mich., has added to its line a new golf ball, named the Echo, to retail at 75 cents and to meet the requirements of the best types of players. It is wound exceptionally hard, making it capable of extreme flight, and its polka dot

markings in red, green, blue and black make it attractive in appearance.

Firestone Ace Tennis Shoe

Introduced for the current season, the Ace tennis shoe has come to be the leader in the entire tennis line of the Firestone Footwear Company, Hudson, Mass. It is a high quality shoe, designed to meet the most exacting tests of the modern game of tennis, and is made in both men's and women's sizes on special new lasts. The uppers are of heavy bleached army duck backed with sheeting and loose-lined throughout with

natural army duck. Its special features are an unusually resilient heel, insole of Armstrong cork to prevent feet from blistering, and ventilated vamp, providing eyelets on the upper forward part of the vamp to allow the heat of the foot to escape. The outsole is of laminated crepe, non-slipping on grass or clay courts. The shoe is protected at the toe with a white gum rubber chafing strip.

CHANGES ARE CONSIDERED FOR 1932 RACING TIRES

Tests were conducted at the Indianapolis Motor Speedway by the Firestone Tire & Rubber Company before and after the Memorial Day 500-mile race to determine whether certain changes in construction of racing tires for 1932 shall be effected. R. S. Taylor and B. P. Bemis, factory engineers, have been in Indianapolis working with E. Waldo Stein, official American Automobile Association tire representative and Firestone racing chief, in experimental runs.

No tire trouble of importance was experienced in the Memorial Day race. Changes for the 1931 race were not of a major nature, Mr. Stein says, although tread stock was slightly harder than that used in last year's racing tires. Other minor changes were made in the new casings, while several of the 1930 tires were employed again in this year's race.

Sizes and inflation pressures, which range closely to 6.00 x 20 for the specially built machines and somewhat larger for the stock jobs and carry about 36 pounds of air, remained practically the same as in recent previous races, although Mr. Stein declared there is a tendency toward the use of smaller wheels as in the passenger car field. While the drop center rim now coming into wide use in the industry has not made its appearance in the racing field, the Firestone representative was of the opinion that it might be found advantageous in racing, as it offered a more perfectly round base than the flat rim base now used in racing.

Accept Cotton Goods Standard

Last February a recommended commercial standard for cotton goods for rubber and pyroxylin coated automobile fabrics was circulated for written acceptance. Since that time the Division of Trade Standards of the Bureau of Standards has received signed acceptances from a majority of manufacturers, distributors and users. It is announced, therefore, that the commercial standard may be considered effective as of June 15 for new production, and printed booklets covering this standard will shortly be sent to each acceptor.

Monsanto Stock for Workers

Directors of the Monsanto Chemical Works, St. Louis, Mo., have approved a plan to offer the company's capital stock to its salaried employes only on a time payment basis of $25 per share. Stockholders will be asked to waive their prior rights to subscribe to new shares, and 21,450 shares will be made available for purchase by workers.

Dayton Adds Warehouse

Contracts have been let for the construction of a new $30,000 warehouse and shipping building at the plant of the Dayton Rubber Manufacturing Company, Dayton, O. The building will be constructed of brick, concrete and steel, and will be used for tire storage, fan belt storage and for shipping offices. Work will start immediately.

Gas Blast Overcomes 14

A tank of sulphuric gas exploded at the factory of the Barr Rubber Products Company, Sandusky, O., on June 10, overcoming 14 of the 45 employees in the building at the time. Physicians said that the workers who had been overcome would suffer no lasting ill effects from the fumes.

Firestone Picnic for 3,000

An all-day picnic with a varied program of entertainment was held June 13 at Springfield Lake Park, near Akron, for 3,000 employees of the Firestone Steel Products Company and the mechanical building divisions of the Firestone Tire & Rubber Company. T. E. Corbett acted as general chairman of the event and was assisted by E. E. Bennett, H. Kohlbecker, W. Brooks, J. P. McAlonan and others.

Cyanamid to Reduce Capital

The American Cyanamid Company is reducing its stated capital to $10 a share for the outstanding Class A and Class B common stock and is reducing its good will account to $1 and making other capital adjustments which will make the net book value of its common stock $14 a share. It will also change its fiscal year to coincide with the calendar year. In a letter to stockholders, President W. R. Bell states: "The depression is still upon us, but inventories have been reduced; there are indications that consumer demand is reappearing, and, though recovery may be gradual, we look forward with confidence to better business."

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LATE MARKET PRICES

RUBBER—COTTONS AND FABRICS—CHEMICALS

NEW YORK, JUNE 20, 1931

Crude Rubber

THE course of the crude rubber market has been downward during the past fortnight, the commodity closing on June 20 about three-eighths of a cent under the close on June 4. A slight drop in domestic stocks was far offset by the rise in rubber afloat.

Prices quoted on the New York outside market at the close June 20 follow:

Plantations—

Ribbed Smoked Sheets—			
Spot—June	.06	@	.06⅛
July-Sept.	.06	@	.06¼
Oct.-Dec.	.06¼	@	.06⅜
First Latex, crepe spot	—	@	.06¼
Amber Crepe, No. 2	—	@	.05⅞
Amber Crepe, No. 3	—	@	.05⅞
Amber Crepe, No. 4	.05¾	@	.05⅞
Brown Crepe, Clean thin	—	@	.05⅞
Brown, Crepe, specky	—	@	.05¾
Liquid Latex, per gal.	.75	@	.85

Paras—

Up-river, fine	.08	@	.08¼
Up-river, coarse	Nominal		
Acre Bolivian, fine	.08¼	@	.08½
Caucho Ball, Upper	Nominal		

Centrals—

Central scrap	.06	@	—
Esmeraldas	.06	@	—

Balata—

Block, Ciudad	—	@	.30

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers

Spot-June	—	@	3d
July-Sept.	3	@	3⅛d
Oct.-Dec.	—	@	3¼d

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers

Spot	—	@	2⅝d

Daily closing prices and sales on the Rubber Exchange of New York follow:

		Spot	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Sales
No. 1 Standard Contract of 10 Tons															
June	5	6.42	6.35	6.50	6.58	6.67	6.75	6.82	6.90	6.99	7.04	7.10	7.20	7.30	62
	6	6.38	6.35	6.45	6.54	6.63	6.71	6.78	6.85	6.92	6.98	7.05	7.15	7.25	—
	8	6.25	6.15	6.25	6.35	6.46	6.53	6.60	6.67	6.75	6.82	6.89	6.99	7.09	55
	9	6.15	6.10	6.20	6.28	6.37	6.45	6.52	6.60	6.67	6.74	6.80	6.88	6.97	71
	10	6.10	5.95	6.10	6.20	6.31	6.36	6.43	6.50	6.55	6.63	6.71	6.80	6.90	205
	11	6.10	6.05	6.16	6.25	6.34	6.41	6.48	6.56	6.62	6.69	6.76	6.86	6.96	74
	12	6.06	6.05	6.12	6.21	6.30	6.36	6.43	6.50	6.57	6.65	6.70	6.80	6.92	70
	13	6.06	6.03	6.09	6.21	6.30	6.36	6.42	6.48	6.55	6.62	6.67	6.77	6.87	4
	15	6.15	6.05	6.15	6.24	6.34	6.41	6.48	6.55	6.62	6.68	6.75	6.84	6.93	13
	16	6.25	6.10	6.20	6.29	6.39	6.46	6.53	6.60	6.67	6.74	6.80	6.88	7.00	18
	17	6.25	6.05	6.15	6.22	6.30	6.38	6.46	6.54	6.60	6.67	6.74	6.84	6.95	58
	18	6.10	6.05	6.06	6.15	6.25	6.32	6.39	6.47	6.54	6.61	6.68	6.77	6.86	70
	19	6.06	6.02	6.04	6.13	6.23	6.30	6.37	6.45	6.52	6.59	6.65	6.74	6.83	33
	20	6.15	6.05	6.10	6.22	6.35	6.43	6.51	6.60	6.68	6.75	6.75	6.90	7.00	16
Old "A" Contract of 2½ Tons															
June	5	——	6.30	6.40	6.50	6.60	6.70	6.70	6.80	6.97*	7.02*	7.08*	7.18*	7.28*	12
	6	——	6.30	6.40	6.50	6.50	6.60	6.70	6.80	6.90*	6.96*	7.03*	7.13*	7.23*	1
	8	——	6.10	6.20	6.30	6.40	6.50	6.50	6.60	6.73*	6.80*	6.87*	6.97*	7.07*	2
	9	——	6.00	6.10	6.20	6.30	6.40	6.40	6.50	6.65*	6.72*	6.78*	6.86*	6.95*	8
	10	——	5.90	6.00	6.10	6.20	6.30	6.40	6.50	6.53*	6.61*	6.69*	6.78*	6.88*	61
	11	——	6.00	6.10	6.20	6.30	6.30	6.40	6.50	6.60*	6.67*	6.74*	6.84*	6.94*	8
	12	——	6.00	6.00	6.10	6.20	6.20	6.30	6.40	6.55*	6.63*	6.68*	6.78*	6.90*	14
	13	——	6.00	6.00	6.10	6.20	6.20	6.30	6.40	6.53*	6.60*	6.65*	6.75*	6.85*	4
	15	——	6.00	6.10	6.10	6.20	6.30	6.40	6.50	6.60*	6.66*	6.73*	6.82*	6.91*	15
	16	——	6.00	6.10	6.20	6.30	6.30	6.40	6.50	6.65*	6.72*	6.78*	6.86*	6.98*	4
	17	——	6.00	6.10	6.20	6.30	6.30	6.40	6.50	6.58*	6.65*	6.72*	6.82*	6.93*	24
	18	——	6.00	6.00	6.10	6.20	6.20	6.30	6.40	6.52*	6.59*	6.66*	6.75*	6.84*	8
	19	——	6.00	6.00	6.10	6.20	6.20	6.30	6.40	6.50*	6.57*	6.63*	6.72*	6.81*	7
	20	——	6.00	6.00	6.10	6.30	6.30	6.40	6.50	6.66*	6.73*	6.78*	6.88*	6.98*	4

*New "A" Contract

Reclaimed Rubber

Reclaimed rubber prices continue to hold up well despite the fractional falling off in quotations for the crude commodity, and the rate of reclaim consumption shows that it is still in good demand for its own special qualities. Late prices follow:

High Tensile

Super-Reclaim Black	lb.	.06¾	@	.07
High Tensile Red	lb.	.06½	@	.06⅝

Shoe

Unwashed	lb.	.05¾	@	.06
Washed	lb.	.07½	@	.07¾

Tube

No. 1 (Floating)	lb.	.08	@	.08¼
No. 2 (Compounded)	lb.	.06¾	@	.07

Tires

Black	lb.	.05¼	@	.05½
Black, selected tires	lb.	.05½	@	.05¾
Dark Gray	lb.	.06¾	@	.07
Light Gray	lb.	.07	@	.07¼
White	lb.	.07½	@	.07⅝
Truck, Heavy Gravity	lb.	.06	@	.06¼
Truck, Light Gravity	lb.	.06¼	@	.06½

Miscellaneous

Mechanical blends	lb.	.04½	@	.05

Scrap Rubber

Scrap rubber dealers find no appreciable let-up in the demand from reclaiming plants, but face a new source of worry in the prospect for an increase in freight rates for their commodity. Current quotations for the various grades of scrap follow:

(Prices to Consumer)

Auto tire peelings	ton	20.00	@	21.50
Mixed auto	ton	9.50	@	10.50
Bicycle tires	ton	7.00	@	8.00
Clean solid truck tires	ton	26.50	@	27.00
Boots and shoes	cwt.	1.10	@	1.20
Arctics, untrimmed	cwt.	.75	@	.80
Inner tubes, No. 1	lb.	.04¼	@	.04½
Inner tubes, No. 2, compounded	lb.	.02¼	@	.02¼
Inner Tubes, Red	lb.	.01⅞	@	.02
Air Brake Hose	ton	9.00	@	10.00
Rubber Hose	ton	8.50	@	9.00

Cotton

UNTIL the final day of the fortnight, the course of the market for raw cotton was generally lower. Announcement of the Hoover plan for war debt suspension, however, forced the prices for the commodity up strongly, together with the security and other commodity markets. While there have been no new bullish developments in recent weeks, it is felt in the trade that the prevailing low prices have amply discounted all bearish factors.

New York Cotton Exchange high, low and closing prices on June 20 follow:

	High	Low	Close June 20	Close June 4
July	8.93	8.75	8.89	8.73
Oct.	9.34	9.16	9.31	9.11
Dec.	9.58	9.40	9.55	9.35

Tire Fabrics

The market for tire fabrics was quiet and unchanged through the fortnight just past. Late price quotations for the various grades of tire fabrics were as follows:

(Prices Net at the Mill)

CORD

Peeler, carded, 23/4/3	lb.	.27½	@	.28
Peeler, carded, 23/5/3	lb.	.26½	@	.27
Peeler, carded, 13/3/3	lb.	.24	@	.24½
Peeler, carded, 15/3/3	lb.	.24½	@	.25
Egyptian, carded, 23/5/3	lb.	.37	@	.38
Egyptian, combed, 23/5/3	lb.	.40½	@	.41

CHAFERS

Carded, American, 8 oz.	lb.	.23½	@	.24
Carded, American, 10 oz.	lb.	.23½	@	.24
Carded, American 12 oz.	lb.	.23	@	.23½
Carded, American, 14 oz.	lb.	.21	@	.21½

LENO BREAKER

Carded, American, 8¼ oz.	lb.	.22	@	.26
Carded, American, 10¼ oz.	lb.	.22	@	.26

SQUARE WOVEN

Carded, American, 17¼ oz. 23-11 ply	lb.	.27½	@	.28
Carded, American, 17¼ oz. 10-ply	lb.	21	@	.21½

Sheetings

Further declines in price featured the sheetings market in the past two weeks. The latest price quotations for the more popular sizes were as follows:

40-inch, 2.50-yard	yd.	.06¼	@	.06⅝
40-inch, 2.85-yard	yd.	—	@	.05½
40-inch, 3.15-yard	yd.	—	@	.07
40-inch, 3.60-yard	yd.	—	@	.05⅞
40-inch, 3.75-yard	yd.	—	@	.04⅝
40-inch, 4.25-yard	yd.	—	@	.04¼

Ducks

There was no change in price structure and no increase in activity in the market for cotton ducks during the fortnight just ended. Closing price quotations follow:

Belting and Hose	lb.	.21¼	@	.23
Enameling	lb.	.19½	@	.20
Single filling	lb.	—	@	.10
Double filling	lb.	.11	@	.11½

CHEMICALS

WHETHER the rubber manufacturing industry will be able to maintain its present comparatively high rate of production activity over the next few months is now the main question of interest to suppliers of chemicals and compounding ingredients. The second quarter of the year has seen factory operation proceed at a rate that compares favorably with any period in the history of the industry with the exception of the peak months of 1929. There will be some let-down shortly, but not, it is hoped, to the slack level of late 1930.

ACCELERATORS

Organic			
A-1	lb.	.24 @	.27
A-5-10	lb.	.33 @	.36
A-7	lb.	.55 @	.59
A-11	lb.	.62 @	.66
A-16	lb.	.57 @	.61
A-19	lb.	.58 @	.62
A-20	lb.	.64 @	.68
A-32	lb.	.80 @	.95
Aldehyde ammonia, crystals	lb.	.65 @	.70
Altax	lb.		
Aniline oil, drums, f.o.b. works	lb.	.14½@	.16
Captax	lb		
Crylene	lb.	.55 @	.65
paste	lb.	.45 @	.55
Di-Ortho-Tolyguanidine	lb.	.42 @	.44½
Diphenylguanidine	lb.	.30 @	.32½
Ethylidene aniline	lb.	.45 @	.47½
Formaldehyde aniline	lb.	.37½@	.40
Heptene	lb.	.40 @	—
Hexamethylene-tetramine	lb.	.58½@	.61
Lithex	lb.	.18 @	.20
Methylenedianiline	lb.	.37½@	.40
Monex	lb.	3.25 @	--
Oxynone	lb.	.68 @	.80
Phenex	lb.	.75 @	—
Pipsol	lb.	4.30 @	4.50
R & H 40	lb.	.40 @	.42½
R & H 50	lb.	.40 @	.42½
R & H 397	lb.	.75 @	.77½
R-2	lb.	1.95 @	2.15
Safex	lb.	1.20 @	1.25
SPDX	lb.	.75 @	—
Super-Sulphur No. 1	lb.		
No. 2	lb.		
Tensilac, No. 39	lb.	.40 @	.42½
Tensilac, No. 41	lb.	.50 @	.52½
Thermio F	lb.	.50 @	.55
Thiocarbanilid, drums	lb.	.21 @	.23
TMTT	lb.	3.00 @	3.25
Trimene	lb.	.75 @	—
base	lb.	1.20 @	—
Triphenylguanidine	lb.	.58 @	.60
Tuads	lb.		
Ureka	lb.	.75 @	1.00
Vulcanex	lb.		
Vulcone	lb.		
Vulcanol	lb.		
Z-88-P	lb.	.50 @	.60
Zimate	lb.		
Inorganic			
Lead, sublimed blue	lb.	.08¼@	—
Lead, white	lb.	.08½@	.08¾
Litharge, domestic	lb.	.07¾@	—
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.35 @	.36
Ultramarine	lb.	.06 @	.32
Browns			
Sienna, Italian	lb.	.05½@	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.30 @	.32
medium	lb.	.31 @	.33
dark	lb.	.34 @	.36
Chromium Oxide, bbl.	lb.	.34½@	.35½
Reds			
Antimony crimson, 15/17	lb.	.40 @	.44
sulfur, free	lb.	.56 @	.66
golden, 15/17 F.S.	lb.	.20 @	.25
Indian English	lb.	.08 @	.11
Domestic (Maroon)	lb.	.11 @	—
Oximony	lb.	.13¼@	—
Red oxide, pure	lb.	.10 @	.12
Smith's 444 Crimson f.o.b. Springfield	lb.	.08¾@	.10
Rub-Er-Red, f.o.b.Easton	lb.	.08¾@	—
Venetian red	lb.	.08 @	.06
Vermillion, quicksilver, English	lb.	1.75 @	1.80
Whites			
Lithopone, Akcolith	lb.	.05 3/5@	.06
Lithopone, Albalith	lb.	.05¼@	.05¾
Lithopone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanium oxide	lb.	.21 @	—
Titanox B, f.o.b. St. Louis,	lb.	.06½@	.07
Titanox C, f.o.b. St. Louis,	lb.	.07 @	.07½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.06⅞
Horsehead Brand:			
Special	lb.	.07 @	.07½
XX Green	lb.	.07 @	.07½
XX Red, lead free	lb.	.06½@	.07
Kadox, black label	lb.	.10⅝@	.10⅞
blue label	lb.	.09⅜@	.09⅞
red label	lb.	.08 @	.08½
St. Joe, black label	lb.	.06½@	.07
red label	lb.	.06½@	.07
Zinc Oxide—French Process			
Anaconda, lead free	lb.	.06½@	.07
Anaconda, selected lead free	lb.	.07 @	.07½
White seal	lb.	.11⅝@	.11⅞
Green seal	lb.	.10⅜@	.10⅞
Red seal	lb.	.09⅝@	.09¾
Yellows			
Chrome	lb.	.16½@	.17
Ocher, French medium	lb.	.02 @	.03
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate, lump	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Bentonite	lb.	.02 @	.03
Blacks			
Arrow "Aerofloted"	lb.	.03½@	.08½
Bone Black	lb.	.06 @	.12½
Carbon, compressed	lb.	.03 @	.07
Carbon, uncompressed	lb.	.03 @	.07
Disperso, f.o.b. Louisiana	lb.	.03½@	—
Disperso, f.o.b. Texas	lb.	.036 @	—
Drop Black	lb.	.06 @	.14
Fumonex	lb.	.03½@	.07½
Excello, compressed	lb.	.04 @	.08
Gastex, f.o.b. Texas	lb.	.03 @	.06
Lamp Black	lb.	.10 @	.40
Micronex	lb.	.03½@	.08½
Thermatomic-Thermax	lb.		
Flex	lb.		
P-33	lb.		
United carbon, fob Tex.	lb.	.03½@	.08½
Velvetex carbon	lb.	.03 @	.06
Blanc fixe dry f.o.b. works	ton	75.00 @	90.00
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Clay, Kaolin, domestic	ton	8.00 @	9.00
Aerfloted, Suprex	ton	8.00 @	20.00
Colloidal	lb.	.05 @	.08
Congaree, c. l. f.o.b. mine	ton	9.00 @	—
Dark Blue Ridge	ton		
Dixie	ton		
Langford	ton		
Lexington	ton	10.00 @	22.00
Mineral Flour, c.l. f.o.b. mine	ton	20.00 @	23.00
Par	ton		
Tensulite		15.00 @	—
Glues, extra white	lb.	.25 @	.26
medium white	lb.	.22 @	.24
Magnesia, carbonate	lb.	.08¾@	.11
Mica, white water grnd.	lb.	.06 @	.08
Off color (biotite)	lb.	.05 @	.07
Rotten Stone (powdered)	lb.	.02 @	.05
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	— @	2.92
Talc, domestic	ton	12.00 @	15.00
Pyrax A	ton		
Whiting, commercial	cwt.	— @	1.00
English cliffstone	cwt.	1.75 @	2.00
Quaker	ton		
Superfine	ton	10.00 @	12.00
Sussex	ton		
Witco	ton	20.00 @	—
Zinc Carbonate	lb.	.09½@	.10½
Zinc Stearate	lb.	.19 @	.22

MINERAL RUBBER

Genasco (factory)	ton	50.00	@52.00
Granulated M. R.	ton		
Hard Hydrocarbon	ton		
Paradura	ton	62.50	@65.00
Parmr, solid	ton	28.00	@48.00
Pioneer. MR, solid	ton	40.00	@42.00
Pioneer-granulated	ton	50.00	@52.00
R & H Hydro-Carbon	ton	27.05	@29.00
Robertson, MR, solid	ton	34.00	@80.00
M.R. (gran)	ton	38.00	@80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulfuric, 66 degrees	cwt.	1.60 @	1.95
Tartaric, crystals	lb.	— @	.31½
Acids, Fatty			
Laurex	lb.	.15 @	.16
Stearex	lb.	.13 @	.17
Stearic, double pressed	lb.	.17 @	.22
Alkalies			
Caustic soda, 76%	cwt.	2.90 @	—
Soda ash, 58% C.L.	cwt.	1.17½@	—
Oils			
Corn, refined, bbls.	lb.	.08¾@	.10½
Cottonseed, crude		.06⅞@	.07
Cycline	gal.	.27 @	.34
Degras (c.l. 100 bbls.)	lb.	.03¾@	—
Less c.l. (10-25 bbls.)	lb.	.04 @	—
Lots less than 10 bbls.	lb.	.04¼@	.04½
Fluxrite	lb.	.05½@	.06½
Palm Lagos	lb.	.05 @	.06
Niger	lb.	.04½@	.05¼
Para-Flux	gal.	.17 @	—
Petrolatum, white	lb.	.08 @	.08½
Pigmentaroil	gal.	.18 @	.23
Pine, steam distilled	gal.	.65 @	.70
destructively distilled	gal.	.54 @	.55
Witco Palm Oil	lb.	.11 @	—
Witco Softener (f.o.b. wks.)	lb.	.02 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	7.00 @	—
Rosin, grade K, 280 lb.	bbl.	— @	6.60
Pigmentar	gal.	.18 @	.23
Tar Retort, 50 gal.	bbl.	13.50 @	15.00
Solvents			
Acetone, pure	lb.	.10 @	.10½
Alcohol, denatured, No. 1 bbls.	gal.	.27 @	.29
Benzol, 90%	gal.	.20 @	.21
Carbon, bisulphide	lb.	.05½@	.06¼
Carbon, tetrachloride	lb.	.06¼@	.07
Dryolene (f.o.b. Okla.)	gal.	.10 @	.10½
Gasoline, steel bbls.	gal.	.16 @	—
Naphtha, solvent	gal.	.30 @	.38
Rub-Sol (f.o.b. Okla.)	gal.	.09 @	—
Turpentine, spirits	gal.	.54 @	.56
wood	gal.	.51 @	.61
destructively distilled	gal.	.35 @	—
Waxes			
Beeswax, white	lb.	.34 @	.36
Carnauba	lb.	.26 @	.28
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06½@	.07
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffin (c.l.—f.o.b. N. Y.)			
Yellow crude scale	lb.	.02½@	—
White crude scale 124/126	lb.	.02½@	—
Refined, 125/127	lb.	.03⅝@	—
Refined, 128/130	lb.	.03¾@	—
Refined, 135/137	lb.	.05¼@	—
Refined, 138/140	lb.	.07¼@	—

ANTI-OXIDANTS

AgeRite, Gel	lb.		
Powder	lb.		
Resin	lb.		
White	lb.		
Albasan	lb.	.70 @	.75
Antox	lb.		
B-L-E	lb.	.57 @	.60
Neozone	lb.		
Oxynone	lb.	.68 @	.80
Resistox	lb.	.54 @	.57
Stabilite	lb.	.57 @	.62
Stabilite Alba	lb.	.70 @	.75
VGB	lb.	.55 @	.66

SPECIALTIES

Aromatics—Rodo	lb.		
Sunproof	lb.	.35 @	.37½
Sponge Paste	lb.	— @	.30
Tonox	lb.	.56 @	.60

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulfur Chloride (drums)	lb.	.03½@	.04½
Sulfur flour, Ref'n'd, 100% pure (bags)	cwt.	2.40 @	2.75
Commercial (bags	cwt.	1.75 @	2.10
Telloy	lb.		
Vandex	lb.		